PACKAGE engineering

Plant-wide teamwork develops machinery

You can avoid confusion, fix responsibility and assure project success by letting the same people who design machinery, install it, make it run normally and maintain it for production. (See Page 29)

How to choose a pressure-sensitive tape

Four aids in choosing the right tape include (1) looking at tape construction, (2) reviewing basic definitions, (3) using a systematic selection process and (4) making simple tests—with or without a laboratory. (See Page 34)

Getting peak accuracy with piston filling

This means having the right filling tube diameter, maintaining a good seal around, and having a correct "bottoming" of, the piston, and making sure there is no wear around the valve. (See Page 40)

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MAY 1959

Volume 4 • Number 5

BULK RATE
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Postmaster: Please send Form 3547 to Package Engineering, 185 N. Wabash Avenue, Chicago 1, Illinois.

U.S.I. POLYETHYLENE NEWS

A series for plastics and packaging executives by the makers of PETROTHENE® polyethylene resins

MAY, 1959 U.S. Industrial Chemicals Co., Division of National Distillers and Chemical Corporation 99 Park Ave., N. Y. 16, N. Y.

Packaging Notes

Easy opening feature for poly packaging is a "DACRON" cord set into the film. The feature is available for any type of polyethylene extrusion lamination, in both roll or pouch form. The cord can be imbedded in the surface of the poly coating, or placed between the poly coating and the material to which the polyethylene is applied. Pouches can also be fabricated with the cord sealed into the side seals of the pouch.

The cord feature is said to be especially suited to packages for cheese, meat, all kinds of dry products, cocoa powders, drink mixes and heat-in-the-pouch items.

Carrots are being marketed in full color, gravure printed poly bags. Appetizing illustrations appear on the face of the bags, along with smaller vignettes and recipes on the back. The bags are said to be the first in the produce field to be printed horizontally.

Universal polyethylene drum is designed to nest inside standard 15 gallon steel or fiber drums. The polyethylene container holds a full 15 gallons and is available with a variety of closures, from standard pipe or buttress threads to external cap closures.

The new drum nests and locks when stacked, needs no pallets. The poly drum is light in weight, unbreakable and carries low freight rates.

A dozen small pockets heat-sealed from a single sheet of polyethylene form a hanging point-of-purchase merchandiser for phonograph needles. The pockets, heat-sealed on three sides, are open at the top for easy removal of the packaged needles. The pocketed polyethylene sheet is stapled to a printed hang card. As the merchandise is sold, the pockets can be restocked. The display is especially suitable for small products that might otherwise be lost or subject to pilferage.

New packaging machine is said to be able to overwrap up to 75 boxes per minute with polyethylene. The machine can also feed, cut and seal a variety of packaging materials. It can handle units three to eight inches wide and a half inch high. Special machine design is necessary for five to nine inch widths. The machine accommodates packages 4¾ to 12½ inches long.

New U.S.I. Polyethylene Plant on Stream: Capacity 75,000,000 lbs. per Year

Plans Already Underway To Double Capacity

A second plant to produce U.S.I. PETROTHENE polyethylene has just gone on stream in Houston, Texas. Capacity of the plant — 75,000,000 pounds per year of low and intermediate density polyethylene resins — increases U.S.I.'s polyethylene production capacity to 175,000,000 pounds per year. The company's other plant, at Tuscola, Ill., now has a 100,000,000-pound-per-year capacity.

Immediate Expansion planned

Along with the announcement that the plant was in operation, U.S.I. also made public plans to double the capacity of the plant by the end of 1960. This would bring the company's PETROTHENE production in the Houston area to a total of 150,000,000 pounds of polyethylene.

The location of the new plant is especially well suited for improved customer service. The Houston Ship Canal permits shipment by barge. All other means of transportation are readily available. Export shipments will be expedited through use of the extensive port facilities in Houston.

The staff for the Houston plant includes Byron J. Anderson, Plant Manager; Eugene C. Carlson, Technical Superintendent; T. Howard Dantzler, Superintendent of Operations; and E. P. Richards, Chief Engineer.

Wide Range of Resins Available

The new plant, which is already shipping commercial quantities, was rushed to completion some six to eight weeks ahead of schedule when demand for U.S.I. PETROTHENE resins began to outrun supply late in 1958. The plant uses a modification of the conventional high-pressure process already proved in the Tuscola plant. Low density (.915-.924) as well as intermediate density resins (.925-.929) are being produced. These are the polyethylene materials commonly marketed as packaging film, garment bags, squeeze bottles, wire and cable coatings and housewares.

In all, PETROTHENE polyethylenes are available in some 70 different resins, each varying in melt index, density, strength, clarity, gloss, slip, stiffness, and other properties. This wide range of resin properties is a result of U.S.I.'s program of tailor-making resins to meet specific molding and extrusion requirements.

New Expansion Will Make U.S.I. 2nd Biggest Producer

When the current expansion program is completed late in 1960, U.S.I. will become the country's second largest producer of polyethylene resins. The new capacity will raise total production of PETROTHENE resins to 250 million pounds.

U.S.I.'s growth in the polyethylene field has been spectacular. Starting with a production capacity of 26 million pounds in 1955, the company will have realized a 900% increase in production when the expanded facilities go on stream.

Along with this growth has gone technical leadership in the field of polyethylene processing, particularly in packaging film. Recently, U.S.I. pioneered a new technique for producing crystal-clear cast poly film that is finding extensive application in large volume overwrap and bread wrap markets. While U.S.I. has specialized in low and medium density resins, it has done extensive research work on a new process for making high density polyethylene. The process is said to be superior to any now in use. U.S.I. also has studied the polypropylenes and other polyolefin copolymers in pilot plant operations.

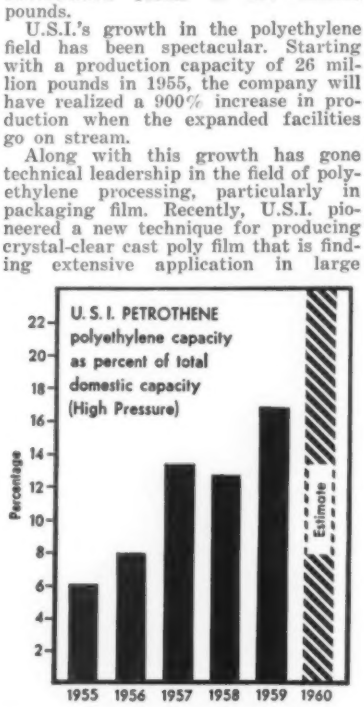


Chart shows spectacular growth of U.S.I. in polyethylene field. Starting as a non-producer less than four years ago, U.S.I. will produce almost one fourth of total U. S. high pressure polyethylene by 1960.

DO YOU HAVE a new polyethylene packaging development you'd like the industry to know about? Make it routine to send your information on new developments to U.S.I. POLYETHYLENE NEWS.

Address the Editor,
U.S.I. POLYETHYLENE NEWS, U. S. Industrial Chemicals Co., Division of National Distillers and Chemical Corp., 99 Park Avenue, New York 16, N.Y.

Aluminum Foil Packaging
The development of Protective Labels

Report No. 21 of a Series by Reynolds Metals Co.

Labels are the simplest of all packaging materials. Their original purpose was merely to identify a product or the contents of a package. As merchandising advanced, they took on color and beauty. Then they took the first step toward protection—as wrap-arounds and over-all coverings which served to keep out dust and similar contaminants. Now, with aluminum foil, labels are transformed into highly functional and protective packaging.

One of the first protective applications of foil labels was for fiberboard baking powder canisters. Moisture pickup by the baking powder during hot humid periods seriously affected its quality. When foil-labeled canisters were used, the quality and effectiveness of the baking powder was maintained more than twice as long as for paper labeled fiber canisters.

Critical for Cleansers

Similar protection against water vapor transmission was needed for cleanser canisters. With the newer and improved cleansers, absorption of moisture caused not only caking but also the release of active components. Since a cleanser canister is normally used in damp places or handled with wet hands, the problem of caking and product deterioration was critical. Actually, aluminum foil labels have proved the only answer. Without foil wrap-arounds it would be impossible to market this product in fiber canisters.

Explanation of Chart

The chart in this report shows the water vapor transmission rates at 100°F. and 90% R.H. of the following four different labels for fiber canisters.

1. 43 lbs./ream litho paper.
2. 43 lbs./ream litho paper with 4 lbs./ream waterproof varnish coating.
3. 4 lbs. waterproof coating on printed 43 lb. litho paper laminated with 15 lbs. of wax to a 20 lb. bond paper.
4. Printed 0.00035" aluminum foil glue laminated to 30 lb. litho paper.

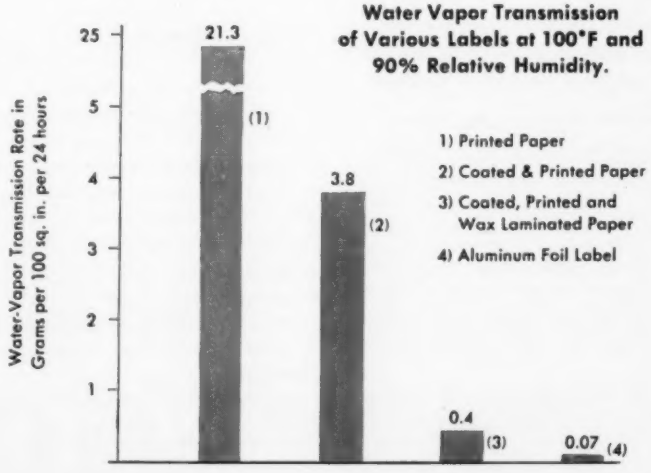
It is to be noted from this chart that, of these commonly used labels, only the Reynolds Wrap AluminumLabel can provide a fiber canister with the necessary protection for the most moisture-sensitive products.

Another example of the importance of aluminum foil in fiber canisters is in the packaging of prepared biscuits. Here the problem was not only one of water vapor transmission, but the label had to provide grease resistance, gas impermeability, wet strength and be non-absorptive. The fiber canisters containing prepared biscuits must withstand an internal pressure of 40 pounds per square inch. This is nearly twice that of the pressure in an automobile tire. Because the packaged biscuits are refrigerated, moisture from without the package, as well as from within, reduces the strength of the canister. Aluminum foil labels and liners prevented the absorption of moisture and grease in the fiber canister, maintaining its strength. The combination solved a severe packaging and marketing problem for prepared ready-to-bake biscuits.

Other Applications

The use of aluminum foil labels is not limited to canisters. In other applications, it performs the vital function of barring the entrance of light. Light can accelerate fading, discoloration, oxidation and chemical changes in many products. In some food products it can cause significant losses of flavor and vitamins. Examples include aluminum foil labels for sliced luncheon meats, where the primary purpose is to prevent discoloration by the lights in refrigerated display cases, and wrap-around labels for bottles. In the latter instance, foil labels have another advantage—they resist wet refrigeration and thereby maintain product identification. An interesting benefit from aluminum foil bottle labels developed in the soaking and bottle washing operation. Caustic soda is used to remove labels and this chemical etches glass. However, with aluminum labels, a sodium aluminate was formed that retarded this etching action.

For labels that can provide protection as well as greatly increased sales appeal, call your nearest Reynolds sales representative or write to **Reynolds Metals Company**, General Sales Office, Richmond 18, Va.



Watch Reynolds TV show "Walt Disney Presents" Friday Nights on the ABC-TV Network.

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For more information circle No. 201 on Card

MAY 1959 • VOLUME 4 • NUMBER 5

PACKAGE engineering

AN ANGUS J. RAY PUBLICATION

For your calendar

May 6-8. AMA packaging clinic, "Economics of packaging machinery," The Hotel Astor, New York, N. Y. Contact: Mr. John L. Wood, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: Judson 6-8100.*

May 17-21. Annual meeting of the Institute of Food Technologists, Bellevue-Stratford Hotel, Philadelphia, Pa. Contact: Col. C. S. Lawrence, Institute of Food Technologists, 176 West Adams Street, Chicago 3, Ill. *Telephone: Andover 3-6268.*

May 25-27. AMA orientation seminar, "Effective use of polymeric materials," The Hotel Astor, New York, N.Y. Contact: Mr. John L. Wood, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: Judson 6-8100.*

May 31-June 13. Packaging training conference, Industrial Management Center, The Lake Placid Club, Essex County, New York. Contact: Mr. James R. Bright, Director, Industrial Management Center, 56 Robbins Road, Lexington, Mass. *Telephone: VO 2-4355.*

June 3-5. AMA workshop seminar, "Cost reduction and methods improvement aspects of packaging," The Hotel Astor, New York, N.Y. Contact: Mr. John L. Wood, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: Judson 6-8100.*

June 3-5. AMA orientation seminar, "Total planning for effective packaging management," The Hotel Astor, New York, N.Y. Contact: Mr. John L. Wood, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: Judson 6-8100.*

November 16-18. 21st annual national packaging forum of Packaging Institute, Hotel Statler, New York, N.Y. Contact: Mr. Charles A. Feld, executive director, Packaging Institute, 342 Madison Avenue, New York 17, N.Y. *Telephone: Murray Hill 7-8875.*

November 17-20. Packaging Machinery Manufacturers Institute Show, New York Coliseum, New York. Contact: Hanson & Shea, Inc., One Gateway Center, Pittsburgh 22, Pa. *Telephone: Atlantic 1-8552.*

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How the Brooklyn plant of Chas. Pfizer & Co., Inc. lets the same people who design machinery, install it and keep it running.

34 Selecting a pressure-sensitive tape, by Carl E. Frick, technical manager, Dutch Brand Division, Johns-Manville Corporation
Using (1) tape construction, (2) definitions, (3) actual selection methods and (4) simple tests as guideposts in choosing tape for a given application.

40 Four guideposts to accurate piston filling, by Albert R. Stevens, vice president, Elgin Manufacturing Company
Basic rules for filling accuracy include (1) proper filling tube diameter, (2) adequate piston sealing, (3) correct bottoming of piston, and (4) absence of wear around valve.

46 Making high temperature prevent packaging line slowdowns
Snowflake Canning Co. shows how to prevent sticking of wax on wrapping machinery and how to prevent bridging of greasy products in filler hopper.

50 Identifying the components of a packaging lamination, by Carl L. Brickman, manager, product testing laboratory, Standard Packaging Corporation
Second part of a two-part article stressing (in this part) additional tests and showing specific analyses of tiny samples of laminations.

60 Manual packaging still important, merits improvement, by Emil Kanzer, industrial engineer, James P. Marsh Corporation
Using a one-piece, self-locking corrugated box (and coordinated manual methods) to package diverse runs of odd-shaped items.

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Reader Service Card inside back cover

Our December 1959 issue will carry a cumulative editorial index for the year listing our feature articles by subject, author, and other headings.

Packaging machine — Model CKP-2 (Patent Pending) by Crompton & Knowles Packaging Corporation

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A note from the Publisher

Packaging progress

Recently Reader's Digest carried an excerpt from an article in Harper's mentioning some of the things that are commonplace today but which an American who died in 1929 would never have known.

Have you ever thought of how many things there are in the packaging field today that were unheard of 30 years ago? The list is tremendous and is probably best illustrated by the products and services that suppliers to the packaging field are talking about in their advertising.

For instance, advertisers in our April issue mentioned: polyethylene, Pliofilm, moisture-resistant corrugated boxes, polyester films, ultrasonic seam welding of foil packages, expandable polystyrene cushioning material, non-stick silicone coated papers, polypropylene, nylon film, resin adhesives, aluminum aerosols, vacuum packages made of foil, molded pulp packages, glass filament tape, polythylene tubes, rip cord sealing tapes, moisture-proof cellophane, pressure-sensitive labels, coatings, and a wide variety of packaging machinery. These are only a few—there are hundreds of additional products.

To see what has happened in the field of packaging machinery, I looked over the advertising that suppliers were doing 30 years ago. There are, of course, types of machinery today that didn't exist then. But I think the most obvious change is the change from slow speeds to high speeds, and the wider range of operations that can be done on one piece of equipment. While some filling machines, for instance, will run at speeds in excess of 1000/min., I would estimate the average plant today is running packaging lines at speeds around 100/min. Judging from the ads of machinery manufacturers of 30 years ago, apparently average speeds then were approximately 25 or 30/min.

It is interesting to note that advertising of 30 years ago was almost entirely concerned with the appearance factors of packaging. A phrase that appeared in advertising copy again and again was that packaging would help keep prices up—quite different from the concern today to keep costs down.

Basically, the two things that would impress the packaging man of 30 years ago with today's packaging, besides the complete change in the method of selling merchandise, would be the tremendous strides in mechanization and the extensive use and influence of chemistry in the 1959 packaging operation, both in the use of chemical packaging materials and the modification of old standby packaging materials with chemical coatings and adhesives.

With justifiable pride we can point to the discoveries and developments within the packaging field in the past 30 years, but isn't it a provocative thought that to the packaging man in the 21st century, perhaps our accomplishments today will seem just as elementary and limited as those of 30 years ago seem to us now?

Angus J. Ray

Publisher

PACKAGE engineering®

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BPA

DO YOU BUY JUST AN ADHESIVE ...OR ADHESIVE ANSWERS TO PACKAGING PROBLEMS?

Buying adhesives involves knowledge in four major areas.

ADHESIVE TECHNOLOGY There are literally hundreds of thousands of adhesive formulas. The selection of chemical and physical characteristics is paramount. Is *your* supplier's salesman well trained—and backed by a competent staff?

PACKAGING MECHANICS Every packaging machine—including 1959's top speed models—is "different" and its idiosyncrasies must be understood before specifying adhesives. Our salesmen take off their coats and work with you, to prevent machining problems from developing.

PACKAGING MATERIALS Changes in packaging materials may require changes in adhesives. We make it our business to keep abreast of this rapidly changing field. Does *your* adhesive supplier?

PACKAGE PERFORMANCE The salesman must understand field demands made on packages. Our "shirt-sleeve" salesmen do.

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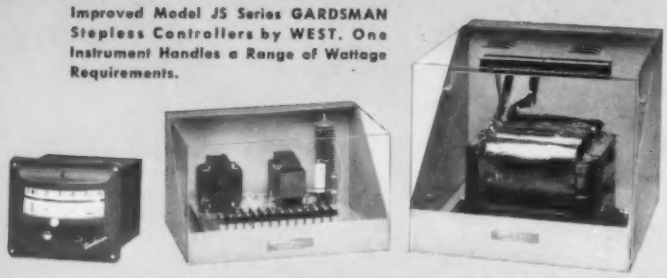

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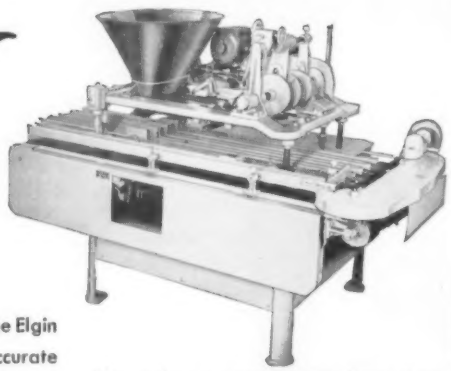

Ideal for glass or tin containers, the Elgin "Quad" is the highspeed, accurate producer—easily and quickly adjusted for fill, and speed! The piston stroke which governs fill in all 4 valves is easily controlled by a single micrometer screw adjusting handle. The upper table assembly is quickly adapted to all container heights by a single hand wheel.

You reduce air pockets and foam to an absolute minimum with the Elgin "Quad" bottom fill. The "Quad" is a proven success with light or heavy packs—is easy to clean—and earns its versatile way with trouble-free deliveries.

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Letters to PACKAGE engineering

Re: Weight control

Gentlemen:

I have read with great interest your series of articles "*A practical approach to a weight-control program*" appearing in three issues of Package Engineering. It would be of great help to me for future references if I could obtain copies of this series. I would like also the article "*Realistic policies on package weight control*" which is very interesting and factual.

More articles on this subject of fill or weight-control programs, I am sure, would tend to clarify some of the thinking in many industries. While many companies have been very progressive in this field, I feel that an equal number are still limping along using outdated and costly techniques.

A. J. Hofer
Process Control Manager
Schering Corporation
Bloomfield, New Jersey

Aside from technical or operating problems, much package weight control confusion stems from varying federal and state requirements.

Re: Setting up color standards

Gentlemen:

If you can spare a dozen reprints of Mr. B. F. Major's article, "*How to set up color standards and tolerances,*" we would appreciate having them.

Not enough attention has been given to protecting trade mark colors whether on corrugated boxes, or other media. This article is down to earth and will do more good in the field than the usual highly technical article on color.

J. F. Carroll
Sinclair & Carroll Co., Inc.
Chicago, Illinois

Production people need workable tools for color control.

beat well... goes for paper making, too

Rhinelander Glassine and Greaseproof papers package the products in this picture

Beat Well says the recipe – and the housewife who knows her cakes knows the importance of beating. And beating is equally important in the making of the high density wax laminated liners that protect cake mixes. These and a host of other time-saver foods are packaged in Glassine and Greaseproof papers . . . the wonder papers of modern packaging. Write for complete information stating your particular application.

In making Glassine and Greaseproof at Rhinelander, beating is a meticulously controlled process, considerably lengthened to transform the cellulose fibres into tiny strands, later tightly compacted on the paper machine. The microscopic fibrillae give Glassine and Greaseproof its density, its greaseproofness, and versatility.

These tight, dense papers keep foods fresh – resist greases, oils and fats–retain aromas, and protect flavor and quality.

RHINELANDER

Rhinelander Paper Company • Rhinelander, Wisconsin

Division of St. Regis Paper Company

GLASSINE AND GREASEPROOF... *PAPERS FOR PROTECTIVE PACKAGING*

The PULSE / of packaging

Trends to watch:

Metal can makers predict a 10 per cent increase in cans for soft drinks in 1959, over the 36,660 tons of tin plate (405,000,000 cans) such cans used in 1958. Shipments of metal cans generally showed a 3.6 per cent gain over 1957. Predictions are that of the total production of 41,800,000,000 cans predicted for 1959, approximately 8,800,000,000 will be beer cans.

By 1964 some 400,000,000 lb. of polyethylene will be used for transparent packaging films, compared to 200,000,000 lb. now being used for film, says **U. S. Industrial Chemicals Co.**, predicting that baked goods, meat, paper products and produce will be areas of greatest film use expansion. It points out that availability of high clarity polyethylene films and suitable overwrapping machinery indicates that overwrapping as a field in itself will "pick up rapidly."

Packagers of beverages speculate on how a fully automatic "take-home" aluminum container dispenser for home dispensing of draft beer, carbonated soft drinks, and other beverages will affect packaging. **Reynolds Metals Co.** has purchased all rights to this new container idea from Chicago inventor, John H. Bull.

Aluminum Foil Container Manufacturers Association, Inc. says nearly 37,000,000 lb. of aluminum foil went into rigid foil containers in 1958, notes that introduction of a number of high-speed machines for handling and closing containers permits added use of them . . . Frozen food packers recently saw three new aluminum foil packages—a boilable pillow-pack for frozen baby food, a boilable wrap package for pre-blocked frozen vegetables, and a cook-in foil carton for frozen prepared vegetables and meat.

Some 70,000,000 lb. of basic chemicals will be produced by the fast-growing urethane industry this year, according to **Mobay Chemical Co.** It predicts increased use of urethane flexible foams.

Canned soft goods have "passed" their first sales test in supermarkets, according to **American Can Co.** Pointing to successful marketing of four different clothing articles packed for the first time in sealed, opaque, rigid paper containers, Canco says this represents "a new untapped market" with a strong long-range sales potential.

Business and Defense Services Administration, U. S. Department of Commerce, is preparing to survey the glass container, closure and metal can industries for the Office of Civil and Defense Mobilization as part of the "survival items" program announced by the government last year. Purpose of the survey is to determine industry capacity to produce containers and closures for survival items, such as foods, medical and health supplies, etc. . . . **BDSA's Containers and Packaging Div.** predicts a record year: It says demand for metal cans will be 2 to 5 per cent over 1958, glass containers 5 per cent, folding cartons and corrugated boxes also up, and aluminum foil packaging expected to attain record proportions of 200,000,000 lb.

The Packaging Machinery Manufacturers Institute has hung the "Sold Out" sign on its 1959 show. It says 153 exhibitors will occupy 64,000 sq. ft. of exhibit area in the New York Coliseum, November 17-20.

Packaging across the seas:

The processed food industry will expand at an unusually rapid rate in Western Europe in the years to come, according to **H. J. Heinz Co.** It notes that living standards and purchasing power are rising, and there is an accelerating demand for goods and services associated with a higher living standard. Now having a factory in Holland and anticipating benefits from the European Common Market, Heinz offers a warning that affects packaging: Different countries have different eating habits; there are different habits and tastes even between the various provinces of Italy.

European Packaging Federation's Technical and Research Committee sets its sights on three immediate objectives: (1) More research conferences, (2) increased standardization of testing equipment and methods and (3) more contacts with international organizations. To be sure of getting qualified participants at its conferences, the committee contemplates making a paper for presentation a required entrance "ticket." EPF's past president, W. P. A. Ditmar, points to "much latent energy" in the packaging world, says many patents are simply in safe keeping and urges study of a possible international patent pool with a sound licensing policy.

Showing how a government can support packaging, the **British Board of Trade** helped some 20 companies and the British Packaging Centre organize a combined "British Packaging" stand at Europak, 1959, held last month in Amsterdam. (The American packaging show "booth" is a "stand" in Europe.)

We hear that some 300 exhibitors have taken space for the **Sixth International Packaging Exhibition** to be held September 8-18 at Olympia, London. Some 34 machinery manufacturers representing twelve foreign countries have taken space. Sponsors say the exhibition will occupy nearly 300,000 sq. ft. and will completely fill the Grand and National Halls of Olympia.

Buying **Vidrio S.A.**, Bogota, Colombia, gives **Owens-Illinois** its third Latin American facility. It should produce glass containers by late 1959 or early 1960, getting 97 per cent of its raw materials from Colombia.

The Cargal Co. has a new corrugated box plant at Lydda, Israel. Serving 25 countries of the Mediterranean area, Africa and Asia, it sells 90 per cent of its output abroad. Its remaining ten per cent serves to ship Israel's citrus fruit.

Minnesota Mining and Manufacturing Co. says its foreign sales volume in 1958 was highest for any year since its direct entry into foreign markets. It now has tape converting operations in South Africa, plans full-scale manufacturing there by late 1959. It plans to establish manufacturing facilities in Japan and Italy.

More expansion for packaging:

Arthur Colton Co. has purchased **Hope Machine Co.**, plans to make Hope machines (now called Colton-Hope) in its Michigan plants . . . **The Crossett Co.** has acquired **Triangle Paper Bag Manufacturing Co.**, Covington, Ky. . . . **Kaiser Aluminum & Chemical Corp.** plans to move its general sales offices from Chicago to Oakland, Calif. . . . **U. S. Industrial Chemicals Co.** has started production at its Houston, Tex. plant, expects it to produce 75,000,000 lb. of polyethylene resins annually . . . **Owens-Illinois Glass Co.** plans a new corrugated box plant near Minneapolis.

Inland Steel Container Div., Inland Steel Co., is building a new facility at its Jersey City plant for producing steel shipping containers . . . **Garfield & Co.**, Edison, N. J. pharmaceutical manufacturer, has a new 20,000 sq. ft. plant

PACKAGES FOR PERFORMANCE

DOBECKMUN design and printing skills have set the standards for the flexible packaging industry for more than thirty years. In printing by processed gravure, for example, Dobeckmun achieves quality of detail and definition on both films and foils that are the picture of perfection. The combination of truly creative package design and unmatched printing, backed by proven records of performance, can be yours to promote and attract new customers to your product. For a demonstration of sales-winning ideas that will perform for you in the market place, call the Dobeckmun representative nearest you.

Dobeckmun printing helps win shelf space and customer demand for Sunniland Nuts. Sunniland sells the whole product story, in words and pictures, visually and readably portrayed in Dobeckmun processed gravure.

DOBECKMUN

DOBECKMUN'S processed gravure printing speeds up turnover for foods, textiles, paper products and thousands of other items marketed in Dobeckmun films and foils. Arresting design, faithful reproduction and flawless registration, in all printing processes, are part and parcel of packages for performance by Dobeckmun.

The Dobeckmun Company, A Division of The Dow Chemical Company, Cleveland 1, Ohio • Berkeley 10, California. Offices in most principal cities.

there . . . **Polycraft Bag Co.** is building a new plant near South Bend, Ind. to make heavy-duty polyethylene bags, plans an initial capacity of 12,000,000 bags a year . . . **Clarke Can Co., Inc.,** Philadelphia, is now manufacturing cold extruded seamless aluminum cans . . . **Revere Copper and Brass, Inc.** now has an eastern district office of its foil container division in New York . . . **The Dobeckmun Co.** has moved its Boston office to larger quarters . . . Also in Boston, **The Dow Chemical Co.** has developed a new communications center to connect its factories and customers . . . **The Crossett Co.**'s research division now has a paper coating pilot plant, Crossett, Ark. . . . **Reichhold Chemicals, Inc.** has formed a paper division handling its wet-strength resins.

Continental Can Co. says its new bleached board mill at Augusta, Ga. should be running by late 1960, will produce 350 tons a day of bleached paper and board . . . **Crown Cork & Seal Co., Inc.** has started an 80,000 sq. ft. can plant at Winchester, Va. . . . **Dubuque Container Co., division of St. Regis Paper Co.,** is breaking ground for a new plant which will give it 200,000 sq. ft. of manufacturing area. St. Regis is also building a 165,000 sq. ft. plant for its **Ajax Box Div.** at Bridgeview, Ill., near Chicago.

The Dobeckmun Co. is enlarging its offices in Charlotte, N. C. . . . **National Container Corp. of California,** an **Owens-Illinois Glass Co.** subsidiary, is doubling the size of its Los Angeles plant.

Packaging dollars and cents:

Minnesota Mining and Manufacturing Co. reports consolidated sales for 1958 of $376,293,016, compared to $370,106,838 for 1957. 1958 earnings were $43,669,033, compared to $39,446,588 for 1957 (after taxes). Progress in cost control, improved operations, increased sales and a changing product mix account for the record-breaking sales and earnings, according to 3M.

Morningstar-Paisley, Inc. reports 1958 sales of $23,136,122, an increase of six per cent over 1957 sales of $21,813,478. 1958 earnings after taxes were $550,524, compared to $483,277 for 1957.

For the first quarter of 1959, **West Virginia Pulp and Paper Co.** reports a 15 per cent increase in sales and 45 per cent rise in earnings. This all-time quarterly high sales figure was $55,500,000, and for earnings, $2,757,000. West Virginia attributes its improved earnings to reorganized and intensified sales efforts, supported by new and improved products.

Federal Paper Board Co., Inc. reports net sales for 1958 of $73,292,000, compared to $76,766,000 for 1957. Net income for 1958 was $4,428,000, compared to $5,399,000 for 1957. Federal says that 1958 earnings reflected the business recession and competitive conditions in the paperboard and folding carton industries, as well as increased costs of company expansion.

Celanese Corp. of America reports net sales for 1958 of $223,708,884, compared to $192,297,353 for 1957. Net income after taxes for 1958 was $16,685,917 representing a 48 per cent improvement over that of 1957. Celanese attributes the increase to improved product groups, greater market diversification, notes that plastics sales (especially high-density polyethylene and extruded acetate sheet) increased twelve per cent over 1957.

Crown Zellerbach Corp. reports 1958 earnings of $33,234,000 and record sales of $468,813,000, attributing these to general improvement in business conditions during the second half of 1958.

Continental Can Co. says its 1958 sales hit a new high of $1,080,393,000, compared to $1,046,267,000 in 1957. Its earnings for 1958 were $41,388,000, compared to $41,040,000 for 1957. During 1958 Continental held its capital expenditures to $38,100,000, expects to spend $63,700,000 in 1959 for additional capital improvements.

Stone Container Corp. reports net sales for 1958 of $35,915,036 and net income of $1,524,251. This compares to 1957 net sales of $36,328,032 and net earnings of $1,481,292.

The Du Pont Co. reports 1958 sales were $1,829,000,000, off seven per cent from 1957, but notes that the fourth quarter set a record high for any quarter in the company's history. Last quarter 1958 sales reached $505,000,000, eight per cent above the closing quarter of 1957.

St. Regis Paper Co. reports net sales for 1958 of $376,789,116, compared to $376,154,432 in 1957. Net income for 1958 was $21,058,962, compared to $21,816,848 for 1957.

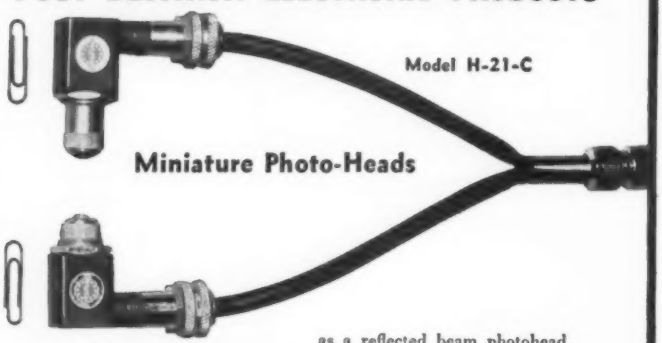
Net earnings for **Owens-Illinois Glass Co.** for 1958 were $37,772,005 on sales of $508,459,930, compared to 1957 earnings of $35,810,017 and sales of $510,486,850.

What people are doing:

Parlin Lillard, General Foods vice president and general manager of its Perkins Div., is now vice president for packaging and special projects of General Foods Corp. **E. F. Fitzmaurice** succeeds Mr. Lillard as general manager of Perkins. . . . **F. B. Redington Co.** has named **Charles L. Barr** chairman of board, **E. A. Siebert** president, **Wade Meloan** vice president, **Dorothy M. Ross** secretary and treasurer and **C. B. Clark, Jr.** assistant secretary and controller.

Louis Ricciardi is now section head, packaging division, General Foods Research Center, Tarrytown, N. Y. . . .

POST DECITRON ELECTRONIC PRODUCTS



Post's Miniature Photo-heads solve the problem of mounting a sensing device in a limited area. Hardly larger than a standard paper clip, these photosensitive, semi-conductors may also be used as a reflected beam photohead.

Average light source life is 5,000 hours . . . designed for industrial use. Alignment brackets to insure proper relation of light source and receiver are also available.

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If you package liquids—Consider SUPER DYLAN High-Density Polyethylene

- RIGID
- LIGHTWEIGHT
- SHATTERPROOF
- STERILIZABLE
- ECONOMICAL
- PRINTABLE
- BROAD COLOR RANGE
- GOOD CHEMICAL INERTNESS

DYLITE expandable polystyrene, DYLENE polystyrene and DYLAN polyethylene are other fine packaging plastics produced by Koppers Company.

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☐ *I'm interested in SUPER DYLAN bottles.*
*My product is*_____.
☐ *Have a Koppers representative call.*
☐ *Send me a sample SUPER DYLAN bottle.*

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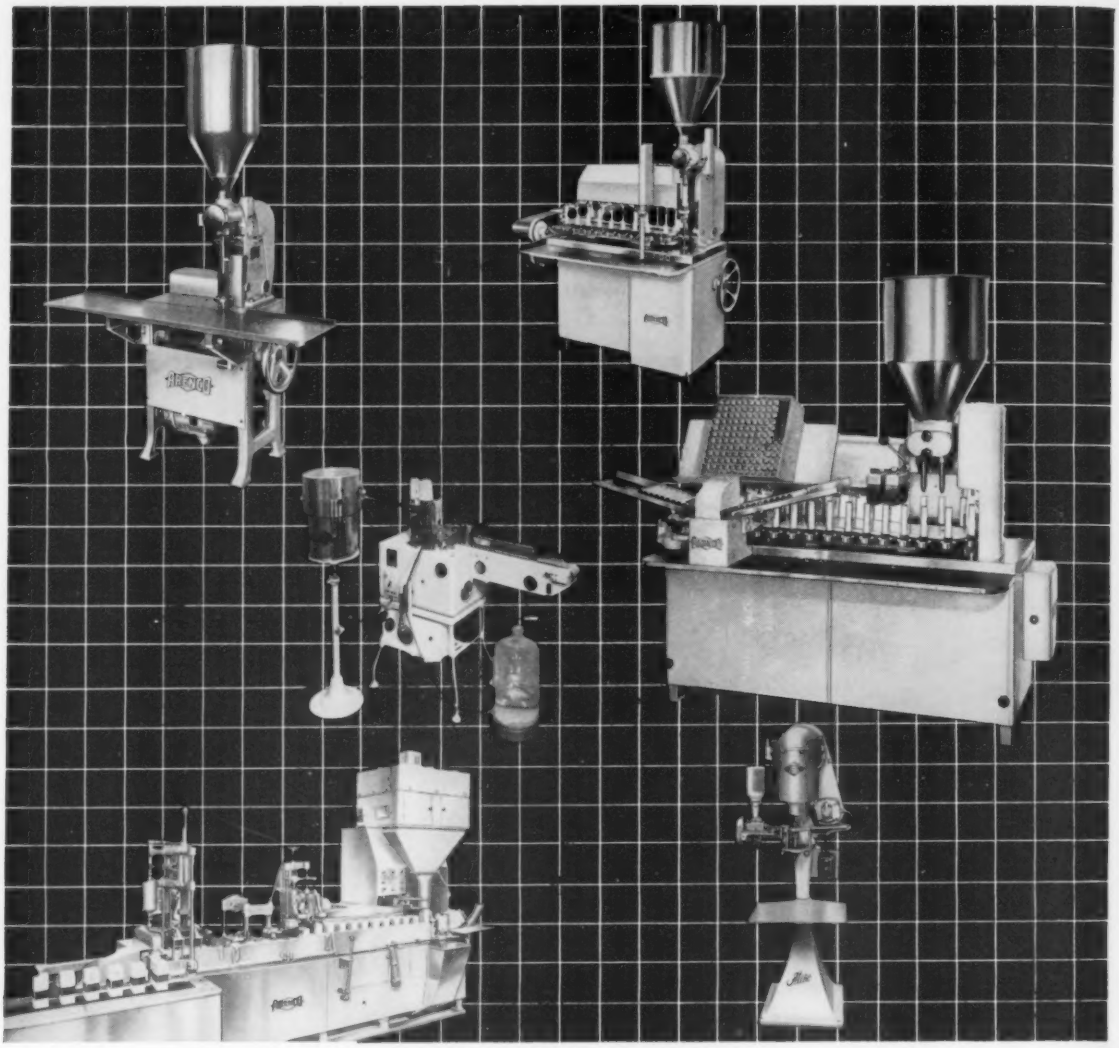

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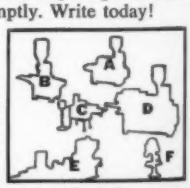
EACH A SPECIALIST IN COST-CUTTING PERFORMANCE

Your economy begins – and package quality improves – when you specify Arenco filling and sealing machinery. They have an enviable reputation throughout the field for delivering top profit performance on every operation.

A complete line of machines – ranging from tube fillers to vial cappers – is available from Arenco. Each is engineered and manufactured to give you *more* than Standard requirements in materials, craftsmanship and operating efficiency. Each can be depended upon to give years of service – and pay for itself in short order.

You'll be making the most of your packaging machine investment when you put Arenco equipment to work in your production.

Complete data will be sent to you promptly. Write today!



A Fully automatic **Tube Filling and Closing Machine GAB** for dental cream and all kinds of cosmetics, penicillin, paints, caviar, mustard, food-pastes, mayonnaise, etc. Output 2400-3000 tubes per hour. Tube cleaning device, jar filling attachment, stirring device and heating arrangement, etc. when desired.

B Model **GAC** Semi-Automatic **Jar Filling Machine.** For approximately the same kind of products as the tube filler. Handles smaller jars up to normal 8 cu. in., at 1,200-1,500 jars per hour.

C **Capsolut** Automatic **A-3.** For all lab bottling operations. Indispensable for perfect vial and bottle sealing . . . for intermittent or steady production capping . . . for medical and pharmaceutical laboratories and manufacturers. Output up to 3600 containers per hour.

D Model **GAN** Fully Automatic **Tube Filling and Closing Machine**—for packaging thick compounds, creams, liquids and semi-liquids. Exceptionally quiet, with easiest cleaning and changeover, includes "no tube, no fill" and photo electric registering features. Output 5000-6000 tubes per hour.

E Model **VUV** Fully Automatic **Bag Filling and Sealing Machine.** For SOS bags or Arenco cartons—1 to 5-pound sizes—ideal for coffee, flour, cereals and like bulk materials. Includes weighing units. Output 1,200-2,000 bags per hour, triple folded and tape sealed.

F Alite **Powder Filling Machine** — for accurate volumetric filling into vials, bottles or ampoules of pharmaceuticals, drugs and other powders — from 25 milligrams to 8 grams.
Also compression filling machines, loose material filling machines, powder compressing machines, can fillers, mixing and batching equipment.

ARENCO

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25 West 43rd Street • New York 36, N. Y.
Manufacturers of filling, capping, sealing & packing machines

POUCH PAPERS

To give the housewife "instant" Mashed Potatoes with all the natural flavor goodness of "home" cooking, R. T. French pack their dehydrated product in "STAY-FRESH" pouches made from a Thilco grade that combines bleached white super-calendered Pouch paper with foil and Polyethylene.

To preserve the true richness and flavor of powdered chocolate and to prevent its "caking" over indefinite shelf-life periods, Servit Foods Co. package their product in heat sealable pouches made from a special Thilco Poly-coated, super-calendered grade. It is furnished flexo-printed in a two-color combination.

Favorite packaged food with housewives everywhere is Kitchen Arts' complete line of Py-O-My Pie, Cake and Muffin Mixes. Basic ingredients are pouch-packaged in papers by Thilco that combine the finest quality super-calendered, pouch grade with polyethylene. Sales message is furnished Print Decorated by Thilco.

Thilco's ingenious paper combinations for keeping foods "FACTORY FRESH" offer radically new marketing solutions

PACKAGE LINERS

Many of Kellogg's wonderfully crisp and flavorful breakfast cereals are preserved in Thilco's special waxed carton liner K-345. Extremely low in M.V.T. it seals excellently and is unusually high in burst and tear strength. This food preservation wrap insures Kellogg of product freshness wherever sold.

From dog chow to breakfast cereals, Purina products go to market safeguarded for factory freshness, flavor and crispness in Thilco's amber-waxed carton liner R-32 — one of the lowest M.V.T. waxed paper grades in the packaging field. It also features unusually high tear strength — excellent heat sealability.

The types of food packaging papers Thilco can furnish are unlimited, indeed! Our complete integrated mill facilities make it possible for us to supply protective grades in endless combinations of glassines, greaseproofs, waxed thermoplastics, foils, cellophane, polyethylene and others, as well as bulk packaging papers and heavy duty shipping wraps to fulfill your most exacting needs. Remember, too, Thilco papers can be furnished PRINT-DECORATED for identification and advertising value.

Write for more information and Thilco's

Free Sample Kits

Tell us your packaging problem and the protective objective you wish to attain. Chances are we've a packaging grade to fill the bill — but if not, we'll make one to your specifications.

THILCO
Functional Papers
THILMANY PULP & PAPER COMPANY
KAUKAUNA • WISCONSIN

NEW YORK • CHICAGO • DETROIT • BOSTON
CLEVELAND • CINCINNATI • CHARLOTTE

FOR IMPRINTING
Flexible Wraps and Films
INDUSTRIAL'S
Rainbow Coder

Attached to either continuous or intermittent types of packaging, wrapping or overwrapping machines — HAYSSEN, BATTLE CREEK, STOKES, TRANSWRAP, OLIVER, GLOBE, BARTELT, WRAP-AID, etc. — the RAINBOW Coder automatically imprints clearly, sharply and *permanently* at packaging point *all* combinations of colors, letters and numbers for marking, dating or coding your products.

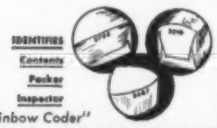
Streamline marking operations
Cut handling costs
Increase volume handled
Reduce inventory costs
Speed up customer service

Everywhere packagers of fresh and frozen foods, baked goods, candies, hosiery, underwear — anything packed in polyethylene, cellophane, waxed paper, glassine, foil, tissue or any material that takes a hot roll leaf impression—know that the RAINBOW Transleaf Coder sets a demanding standard of comparison hard to beat because the RAINBOW Coder contributes so efficiently to profits.

The economical, rugged RAINBOW saves package pre-printing, inventory and storage costs—needs no operator, no ink, no makeready— and next to no maintenance.

Before you buy any marking equipment, take a good look at the RAINBOW CODER — you'll have a standard for comparison! For complete information, write today.

Dept. PKE



"Rainbow Coder" is a trademark for Industrial's marking equipment.

ime INDUSTRIAL MARKING EQUIPMENT company, inc.
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Dr. John G. Turk, long director of Glass Container Manufacturers Institute's packaging research laboratory, is now technical director of the research, product development and standards laboratory of Owens-Illinois Glass Co.'s paper products division, Toledo.

E. King Graves, formerly manager of American Management Association's packaging division, is now on the headquarters sales executive staff of the Portland division of Emhart Manufacturing Co. . . . Acme Backing Corp. has named **Robert L. Lee** general sales manager of its flexible packaging division . . . **G. J. Swank** is now manager of administration services for West Virginia Pulp and Paper Co.'s Hinde & Dauch Div. . . .

Mead-Atlanta Paper Co. has named **Charles Barker** general production manager, **Rutledge Bermingham, Jr.** general manager of its packaging division, and **Emmett Boyett** plant manager of its flexographic, gravure, inline coating and die cutting production facilities.

Henry C. Vacketta is now chief application engineer of the eastern operation of Food Machinery and Chemical Corp.'s canning machinery division . . . **Kenneth Arnold** is now vice president of Stein Hall & Co., Inc., and **John R. Lindquist** is now manager of Stein Hall's paper & corrugating department . . .

Container Corp. of America has appointed **William A. Keiss, Jr.** general manager and **William S. Schillhahn** plant manager of its Chattanooga mill. **Samuel F. Leigh** is now sales manager of Container's New York national accounts office for folding cartons. CCA has also named **Lyman Smith** sales manager of its Chattanooga corrugated shipping container plant. **C. Berger Graves** is now vice president in charge of Sefton Fibre Can Co.'s fibre can division. **Robert J. Brockman** is vice president in charge of Sefton's plastics division.

U. S. Industrial Chemicals Co. has named **Richard C. Phelps** customer service group leader . . . **William W. Scheide** is now manager of manufacturing and engineering, **Wray H. Callaghan** general sales manager, and **J. C. Hendricks** general sales manager-bleached board and carton development, all of Continental Can Co.'s boxboard & folding carton division. Continental has named **Dr. Robert B. Mesrobian** general manager of paper and plastic container research and development.

Garfield & Co., Edison, N. J. pharmaceutical manufacturer, has named **Elliot Bartner** general manager . . . **Paul N. Donnelly** is now manager of container products of the Western Div., Dewey and Almy Chemical Div., W. R. Grace & Co. . . . Mead Containers, Inc. has named **Edward J. Powlenko** director of packaging engineering service . . . The Goodyear Tire & Rubber Co. packaging films department has transferred **Charles H. Smith** from Boston to Philadelphia and has named **Robert J. McLaughlin** and **Richard J. Polka** representatives at Cincinnati and St. Louis, respectively . . . **Richard Costello** is now assistant sales manager of Kehr Products Co. . . . **Amory Smith** is now regional sales manager of Avery Label Co.'s sales office at Atlanta, Ga. . . . Metal Edge Industries has transferred **Ernest W. Staudenmayer** from northern New Jersey to Philadelphia. **Albert D. Busick** is now a Metal Edge packaging engineer covering Illinois, Missouri and Kansas. **Peter M. McDade** and **Robert H. Woelfl** are now representing Metal Edge in northern New Jersey and California, respectively.

James F. Porter is now chief engineer of Chase Bag Co. . . . Stone Container Corp. has named **Herbert J. Spohr** assistant sales manager of its Chicago corrugated container plant and has named **Edwin D. Rose** sales manager of its Western Paper Box Div., Detroit.

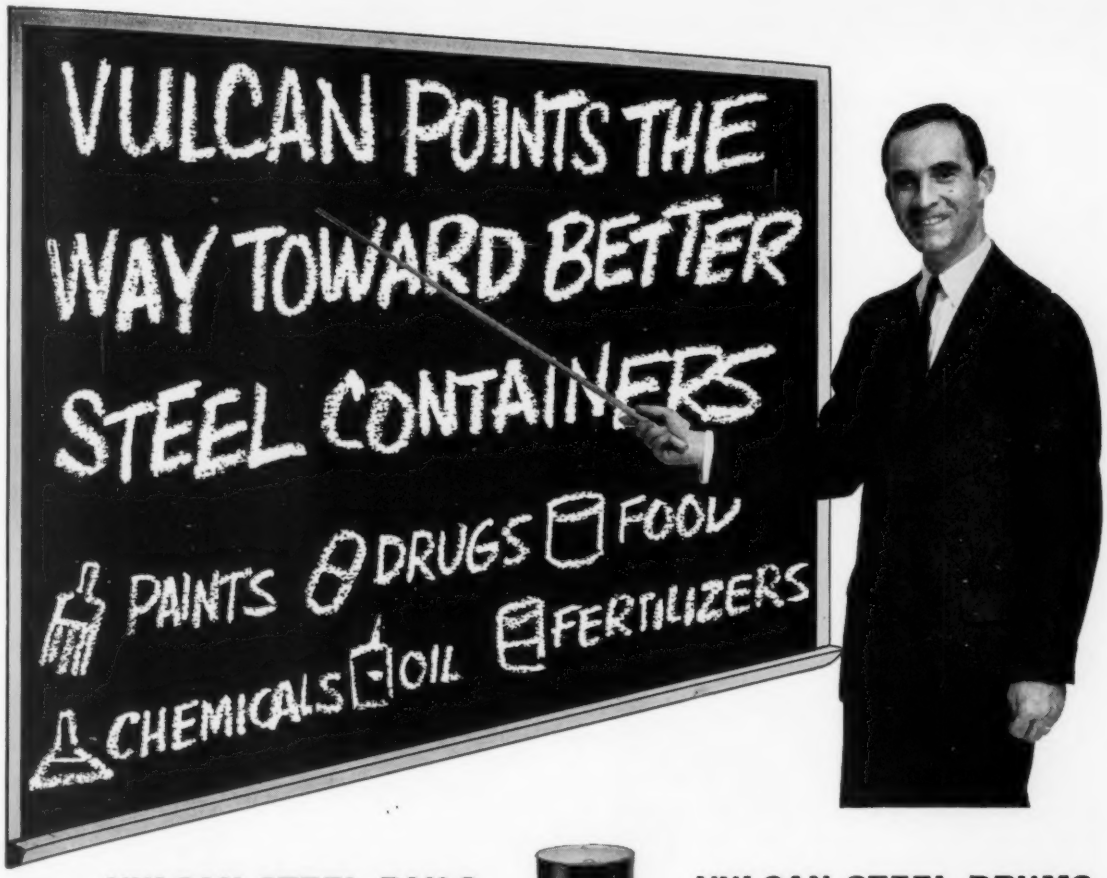
Richard C. Reed, Jr. is now district sales manager of Jones & Laughlin Steel Corp.'s container division, Port Arthur, Tex. . . . Crown Cork & Seal Co. has named **Gilbert W. Wiessner** sales representative for North Carolina . . . Thatcher Glass Manufacturing Co., Inc. announces appointment of **Paul L. Hershfield** as executive vice president . . . **William C. Somerville** has been named general traffic manager of Celanese Corp. . . . **Robert D. Glidden** is now vice president of Personal Products Corp. . . . Standard Packaging Corp. has named **George A. Littlefield** manager of its chemical fine paper and board division, Holyoke, Mass.

Western-Waxide Div. of Crown Zellerbach Corp. has promoted **Robert L. Appling** to assistant general manager in charge of sales, **Cecil L. Dilling** assistant to vice president and general manager, **Moss A. Barr** assistant general manager for production and **Robert Rant** resident manager at North Portland.

Richard C. Burton is now sales manager of Canton Corrugated Box Co., division of St. Regis Paper Co. St. Regis also has named **Michael J. Walsh, Jr.** traffic manager of the company.

Container Laboratories, Inc. has elected **James A. Sargeant** president and treasurer, succeeding **Allyn C. Beardsell,** now vice president and general manager. Other new officers are: **Thomas P. Wharton,** vice president and manager of the company's Washington, D. C. division and **Jerome J. Kipnees,** vice president and manager of the New York and Philadelphia divisions.

Fenwal Incorporated has named **Kingdon R. Watt** manager of the adhesive pack department . . . . **William M. Wilkinson** is now secretary of National Safe Transit Committee, Inc. *(End)*



VULCAN STEEL PAILS

The manufacturer needing a small package for his requirements can choose exactly the right size and type from the complete Vulcan line of steel pails. Vulcan offers a choice of gauges in both lug cover and closed head types in sizes ranging from one to fifteen gallons.

VULCAN STEEL DRUMS

These drums are the choice of leading manufacturers for the shipment and storage of liquids, plastics, crystals, semi-solids, and powders. All standard drum gauges are available . . . check with us regarding closures and accessories.

CHECK WITH VULCAN ON THESE TOO!

GREASE DRUMS . . . Available in both 120 and 100 pound capacities.

15 GALLON DRUMS . . . A new addition to the Vulcan line—available in open head and closed head types.

VULCAN

Vulcan offers real flexibility with a choice of linings, closures, accessories, and various painting and decorating services. Mail coupon for full information and the name of your Vulcan representative.

VULCAN CONTAINERS INC., Bellwood, Illinois

Gentlemen: I am interested in: PE-59

☐ Pails, in the following sizes_____

☐ Hi-Bake protective linings for (product)_____

☐ 55 gallon drums.

Please get this information to

Name_____

Company_____

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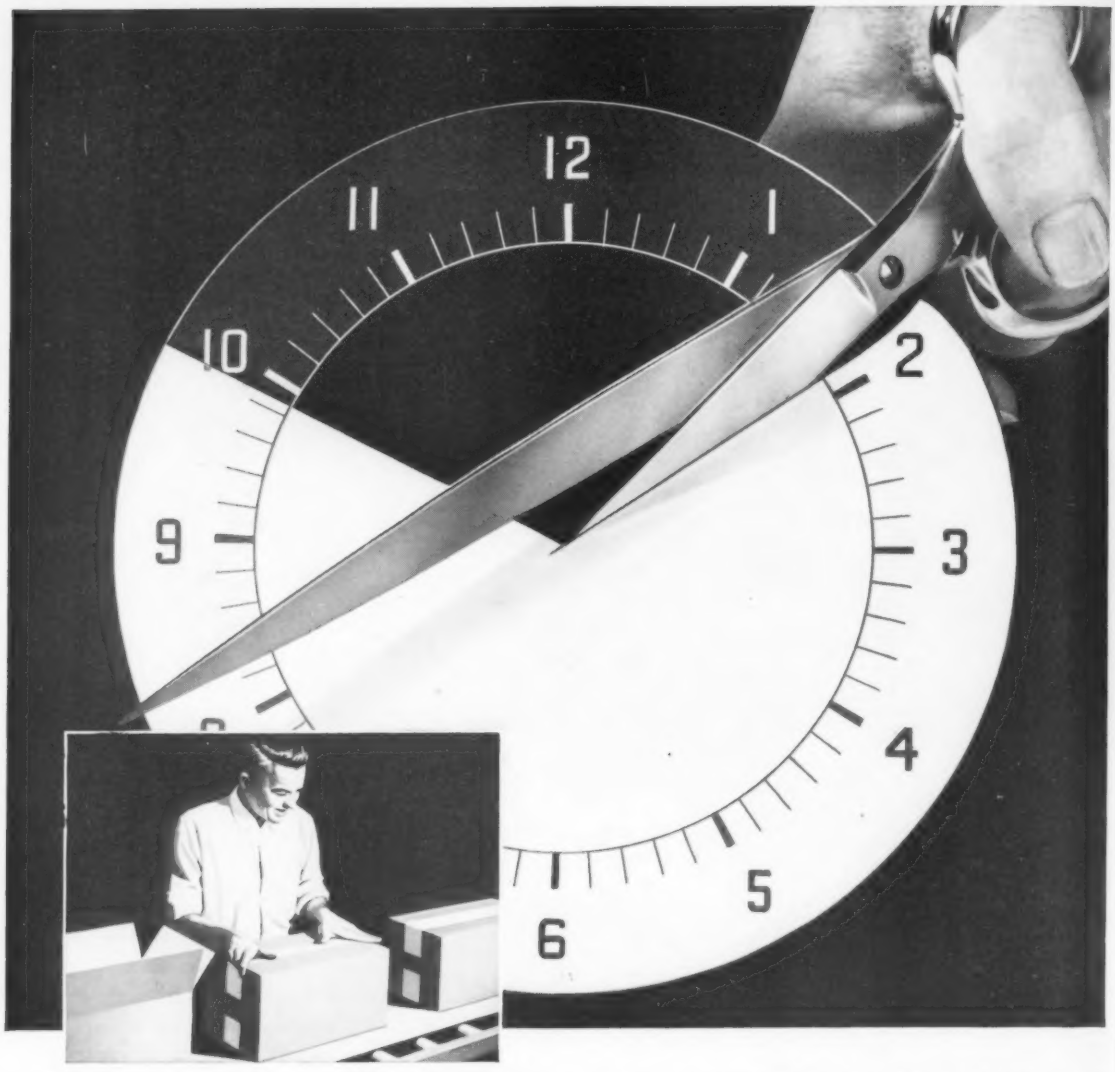
City_____ Zone____ State_____



How to Save 2/3 the Cost of Sealing Cartons

Because tape to seal cartons for shipping is now reinforced with steel-like fibers for unbelievable strength, only *two* strips are needed. A change to this up-to-date method can reduce your carton sealing time by two-thirds. If you ship by rail, you will be interested to know that the Railroads have approved this 2-strip sealing method.

Where else in your production operations can a comparable 66⅔% time and labor savings be found? Write for further information that will help your Shipping Department secure these economies. American Sisalkraft Corporation, Attleboro, Massachusetts.

SISALKRAFT

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Chicago 6 • New York 17 • San Francisco 5
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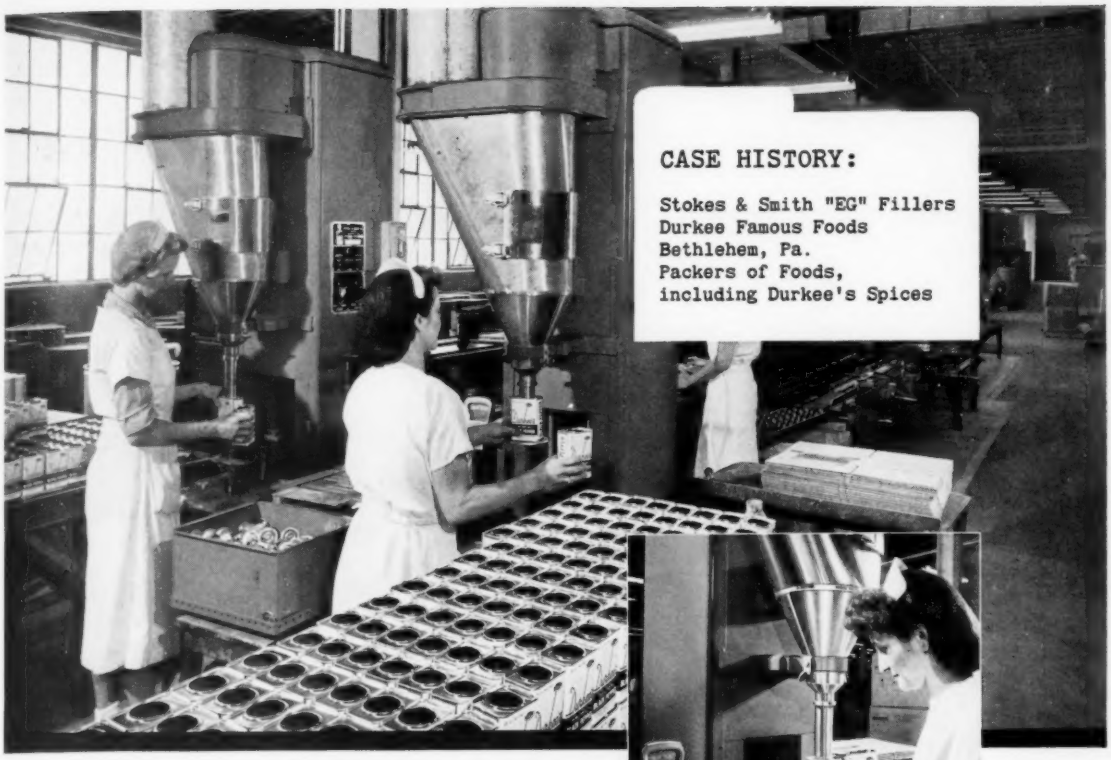
reinforced paper, foil and plastics for construction, industrial packaging and agriculture



Operator spot checks package weight. Dependable accuracy of "EG" Fillers has eliminated "shrinkage" caused by overfilling.

"EG" Fillers nearly double production while slashing "shrinkage."

"Since we replaced our filling equipment with Stokes & Smith "EG" Fillers, we've almost doubled production with no increase in the number of machines," reports Durkee Famous Foods, Division of Glidden Company. "At the same time, 'shrinkage' has been substantially reduced because filling is accurate."

"Besides saving us money, the machines have made it possible for us to increase our range of containers. Without complicated changeover, we now fill eight ounce cans, 16 ounce cans and glass, five pound cans and six pound sizes in cans and cartons."

In addition to handling a wide variety of container types, the "EG" Filler offers four filling methods to meet specific requirements – cam controlled auger, pressure packing, gross weight or combination auger-vacuum. Extreme flexibility and quick changeover make this unit ideal for short runs and off-size containers.

FOR COMPLETE INFORMATION, ASK FOR BULLETIN P-802-R.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

FMC Packaging Machinery Division

Stokes & Smith Plant

4994 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

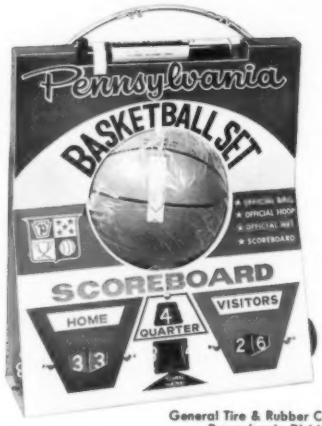
For more information circle No. 216 on Reader Service Card

Ohio Boxboard wins

in the Fibre

2 Gold Awards

The Papercraft Corporation



General Tire & Rubber Company, Pennsylvania Division

5 Bronze

Argus Cameras Division of Sylvania Electric Products, Inc.

One minute this delicate projector is firmly cushioned in its shipping container. The next, it's proudly perched on an attractive display base. "Float-pack" and die-cut interiors suspend the projector within the package. Bronze Award: "Inner Packing and Inner Containers."

Gar Wood Industries, Inc.

Expensive hub caps were easily damaged and difficult to handle until Ohio Boxboard developed this system for palletized handling of four dozen sets. Faster set-up time, easier handling, lower cost packing and complete protection provided a substantial saving for this manufacturer. Bronze Award: "Palletized Products."

The Ohio Boxboard Company · Rittman, Ohio

PLANTS: The Ohio Boxboard Co., Rittman, O., Empire Box Corp., South Bend, Ind., The General Carton Co., Cleveland, O., The Norwalk Paper Box Co., Norwalk, O., Western Containers, Inc.,

Top Award Honors

Box Competition

Brilliant setting for up to 100 pounds of beautiful gift wrappings... Large supply area eliminates frequent refilling... A complete gift wrap department right at the customers' fingertips. Gold Award: "Floor Stands."

What boy or his dad could resist this complete basketball set? Contrasting bright colors demand attention... ask to be carried home. Ohio Boxboard innovation—an easy-to-set-up scoreboard. Gold Award: "Distinctive Features."

Awards

Ace Rubber Products, Inc.

Martin Bros. Electric Company

A deluxe hair dryer, including plastic dome, motors, gears, seat, vibrator chair, dials and metal stand, is packed in this one container. Ohio Boxboard's free "National Safe Transit Testing Program" proved this package safe for shipment before customer purchased first order. Bronze Award: "Other Products."

Flaming fluorescent ink, strong, comfortable carry-home handle, unique "peek-in" flap are all features that sell more... sell faster in the competitive automotive products market. Bronze Award: "Other Products."

Jet black interior provides jewel case setting for white dishes. Sturdy partitions secure all pieces yet allow easy removal. Handsome blue and black printing, plus a distinctive shape, give this dinnerware strong billboard advertising all the way home. Bronze Award: "Carry Home Packs."

Champion Molded Plastics, Inc.

Planned Packaging moves merchandise

Lockport, N. Y., Fairbanks Containers, Inc., Middletown, O., Champion Containers, Inc., Plymouth, Mich., The Ohio Boxboard Co., Cuyahoga Falls, O., The Ohio Boxboard Co., Youngstown, O.

Robo-Lift's "tender touch" works for General Mills

Robo-Lift provides its gentle action to operators of General Mills. This bucket elevating conveyor can be depended on not to crumble cereals, not to make cake mixes lumpy.

Some of the 20 Robo-Lifts at General Mills' Toledo Plant feed raw materials into processing machines. Others carry finished products to packaging operations. Robo-Lift's versatile "up-and-over" operation is especially welcome in this one-floor plant where second-story top-loading is impossible.

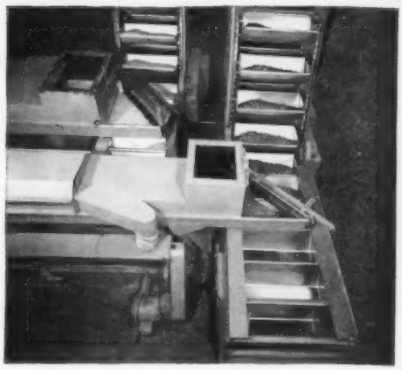
Stainless steel buckets make Robo-Lift ideal for all food processing plants. They are easy to keep clean, help keep products pure. Overlapping edges prevent spilling—ease housekeeping problems.

Robo-Lift will provide gentle, sanitary, economical materials handling for your plant. Its "tender touch" will help keep your product quality high. Write for complete details.

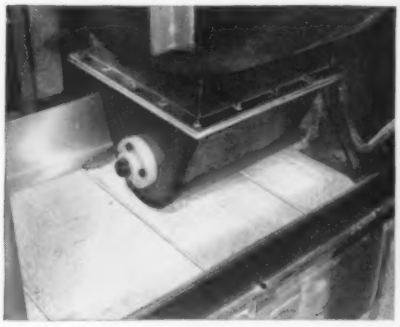
Send for the six page folder that tells the complete story of Lynch at General Mills.

LYNCH CORPORATION
Anderson, Indiana
Manufacturing Engineers of automatic processing equipment for the glass, packaging, plastic and other industries

Atlanta • Chicago • Wallington, N.J. • Kansas City, Kansas • San Francisco



Filling Robo-Lift with dry cereal from drying trays and vibratory feeders. Robo-Lift carries cereal to sugar-coating process or to package-filling point.



Robo-Lift carries General Mills cake mixes from the mixing operation to the packaging point. The machine's gentle action prevents chunkiness—assures a smooth, uniform mix.

Among the many General Mills products handled by Robo-Lift are Cheerios, Coco Puffs, Kix, Trix, Hi-Pro, and 25 different cake mixes.

LYNCH
CORPORATION
Anderson, Indiana

LIQUID DETERGENT is safely packaged in envelopes of "Scotchpak". Tests on polyethylene and other film laminates showed seam leakage. "Scotchpak" holds tight.

STRONG CHEMICALS—in liquid or dry form—can be packaged in "Scotchpak". Film resists puncturing and tearing, can be printed easily—no anchor coat needed.

PASTE CLEANSER shelf life was extended 50% when this manufacturer switched from polyethylene to "Scotchpak" Heat-Sealable Polyester Film.

SAMPLES of almost any inorganic or organic compound can be sealed in envelopes of "Scotchpak". Transparent packages are easy to handle, easy to ship and store.

"SCOTCHPAK" TAKES OVER

and streamlines a multitude of packaging jobs!

Looking for a film that's *tough*, clear as glass—one you can freeze or boil? And would you like that same film to be heat-sealable with a seal that's as tough as the film itself? Then your answer is "Scotchpak".

Here is a film that combines the best features of many films. It can be heat-sealed in less than 2 seconds—a temperature of 300° to 400° F. and 20-60 psi is all that's required.

"Scotchpak" Film resists freezing cold (down to -70°F.) and boiling heat (up to 240°F!). It resists acids, oils, alkalies and organic solvents. It is light (saves shipping costs!) and compact (saves space in shipping and on the shelf, too!).

"Scotchpak" is now available in roll-stock widths up 50 inches—from 2 mils to 4.5 mils thick, ready for printing—if you desire. It can be easily handled on conventional bag making and filling equipment.

Our Customer Service organization is ready to work with you—to show you how "Scotchpak" can solve your film fabrication and packaging problems. For complete information, write Film Products Group, Dept. LY-59, 3M Company, St. Paul 6, Minnesota.

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"SCOTCHPAK" IS A REGISTERED TRADEMARK FOR THE HEAT-SEALABLE POLYESTER FILM OF 3M CO., ST. PAUL 6, MINN. EXPORT: 99 PARK AVE., NEW YORK 16. CANADA: LONDON, ONTARIO

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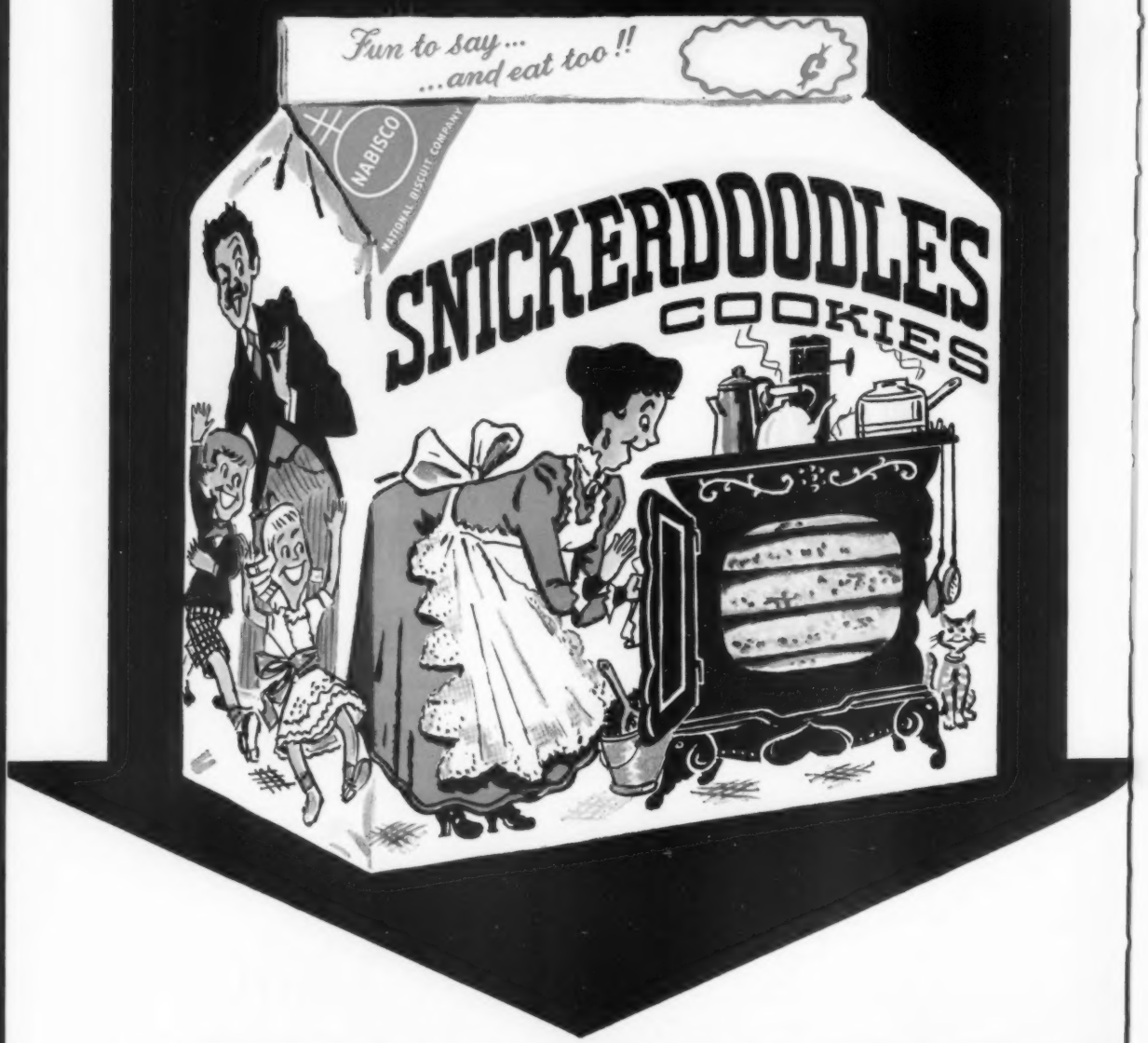
. . . WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

NABISCO's Unique, Sparkling, Eye-catching Cookie Bag is made of NIBROC® WHITE



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More and more producers of products ranging from Bakery Goods to Plant Foods to Briquets are packaging their products in paper—and the top choice of converters and end-product users alike is Nibroc White.

Strong, bright Nibroc White prints beautifully . . . handles superbly on forming, filling and closing machinery. Available in super-calendered and/or embossed finish.

Discover for yourself why so many of America's "Brand Name" products are packaged in Nibroc White. Write for samples and complete information to our Paper Sales Division, Department RK-5, Boston, Massachusetts.

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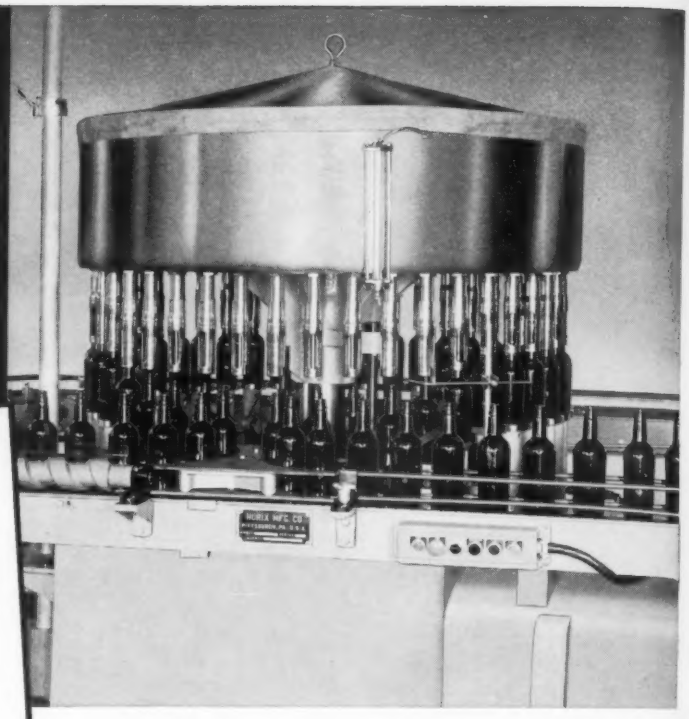
The Finest Liquid Filler Ever Built



CHECK THESE *NEW* FEATURES

- 60" Pitch Diameter (48 valves for new high speeds)
- New Fluid Drive with synchronized air powered brake
- Automatic Supply Valve for positive product control
- Electronic Safeties
- Automatic Lubrication
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CHECK THESE *STANDARD* FEATURES

- Non-aeration of product
- No overflow and return system
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- Individual Container Control

THIS new liquid filler is representative of a new series of Horix HF gravity fillers, designed for handling any liquid in any type container, at high speeds, with extreme accuracy.

- Fruit Juices—600, 202 cans per minute
- Whiskey—245 fifths per minute
- Anti-Freeze—150 sanitary gal. cans per minute
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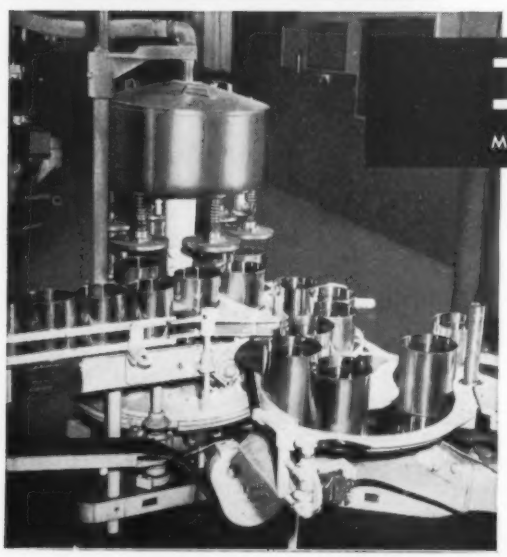
- Tomato Juice (26 oz. bottles)—280 c.p.m.



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MANUFACTURING CO. • PITTSBURGH 4, PA.

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Shown here is one of Horix's small framed, moderately priced machines for lower speed operation. These smaller models are built to the same high standards of precision, provide the same unexcelled accuracy and long life of the larger, higher speed models.

Model HES-6 illustrated, is a 6 valve General Use Can Filler, capable of speeds up to 40 c.p.m.

Horix Fillers come in a wide range of sizes and types for high or low speed production. Write for Catalog No. 581.

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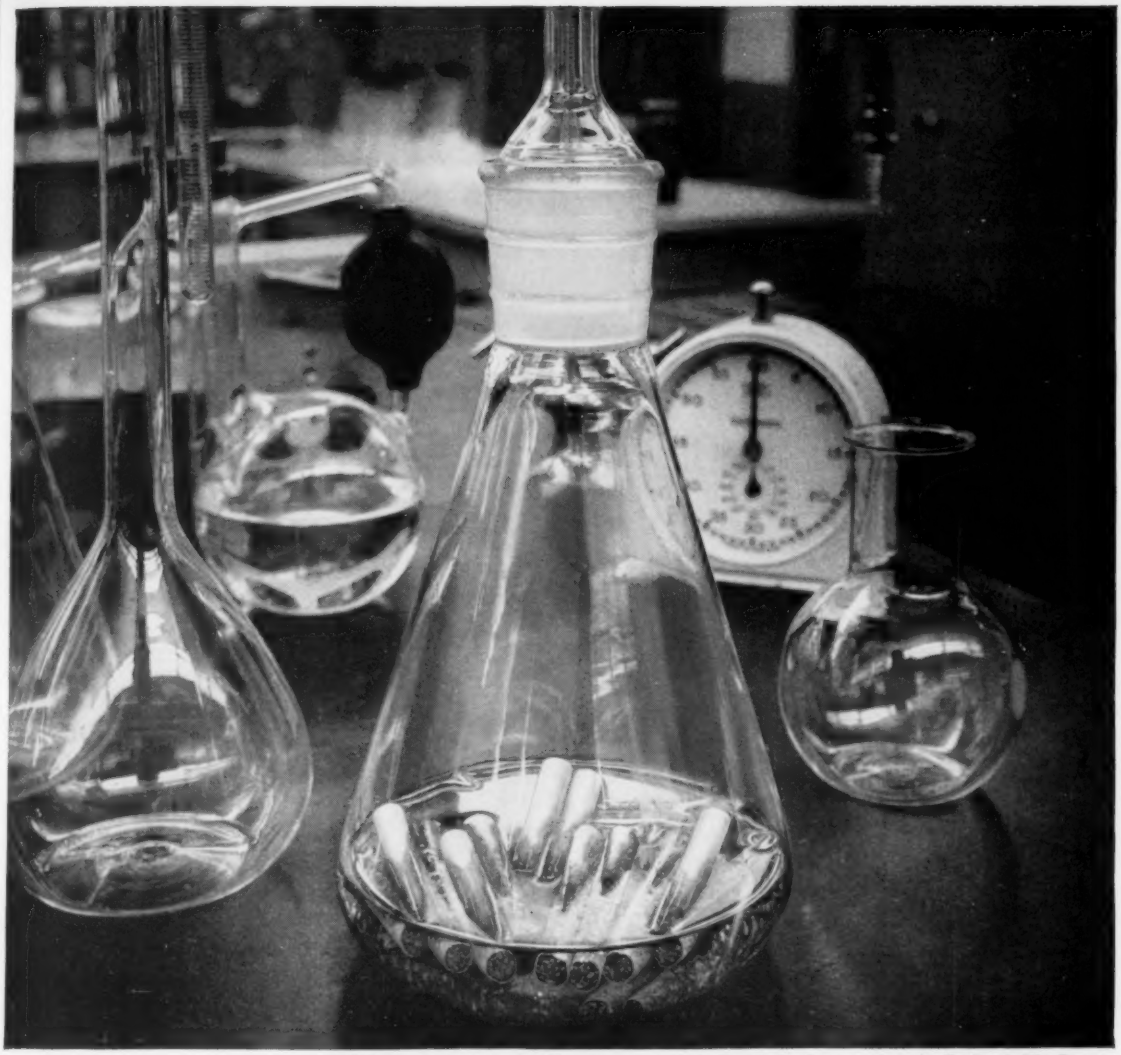

A Moisture Analysis Test on Cigarettes . . . typical of hundreds of tests conducted at Du Pont's Film Department Technical Laboratories to evaluate the moisture protection and other performance data of cellophane.

Tests like this help Du Pont develop cellophanes with exactly the moisture protection your products need

Each of Du Pont's more than 100 types of cellophane has a specific water vapor permeability. Some let moisture in . . . others keep it out. There are cellophanes to protect the 12% moisture content of cigarettes . . . the 35% of white bread . . . the 37% of Cheddar cheese . . . the 3% of dry shredded coconut.

Other cellophanes are tailored to meet the WVP and other requirements of items like candy, cookies, meats, produce, cereals, chips.

Cellophane's outstanding balance of properties makes it the most versatile packaging material you can use.

Experiments like the one shown above assure that you get the cellophane tailored to meet *your* needs . . . when you specify Du Pont cellophane by code designation.

When you need help, call your Du Pont Technical Representative. He is your best source of service. His reference folder, "Properties and Uses of Cellophane", can be useful to you. Ask him for a copy or write direct to E. I. du Pont de Nemours & Co. (Inc.), Film Department PE-5, Nemours Bldg., Wilmington 98, Delaware.

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DU PONT cellophane

DO YOU KNOW

how versatile the HUDSON-SHARP Campbell Wrapper really is?

FOR PRODUCTION VERSATILITY—

You can wrap and seal with the material of your choice — for the preservation you need and sales turn-over you expect, with a Campbell Wrapper. (1) It hermetically heat seals (including for gas flush) films and foils. (2) It heat seals other materials... including waxed papers. (3) It glues and/or crimp seals still other materials. Only the Campbell Wrapper does all three! In addition, you benefit from increased production because it automatically wraps single or multiple product packs—in rows, on edge, or stacked, at speeds up to 300 units per minute!

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Hard or soft — crisp, brittle or fragile . . . Whatever your product's consistency, it can be packaged on a Campbell Wrapper, without crush or breakage! Shape makes little difference either, for this machine wraps products that are square, oblong, round, oval, cylindrical, flat or irregular in shape. Campbell wrappers package a vast variety of products such as:— Crackers, Cookies and other bakery items; Candies and Ice Cream; Cheese, Bacon, Franks and Table-Ready Meats; Pharmaceutical supplies; Hardware parts; Textiles; Paper Products and 1001 varied items.

WRAPS WITH KRAFTS, GLASSINES, WAX PAPERS, FOILS, CELLOPHANE, POLYETHYLENE, PLIOFILM AND OTHER PLASTIC FILMS

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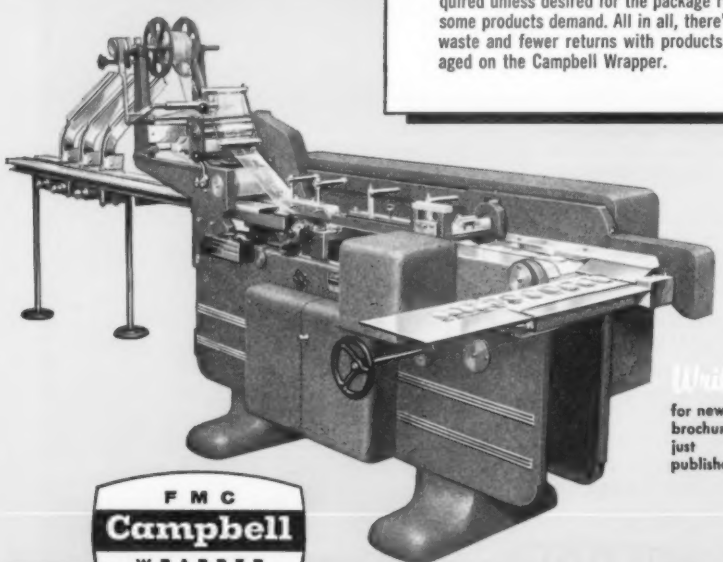
Labor costs decrease with the Campbell Wrapper as in many cases it reduces help by 7 or 8 persons! Very often, one person to feed and one to pack is all that is necessary and no special skills are required. You effect important material savings, too, for this wrapper uses only the minimum necessary to cover the product and seals without costly oversize seam laps. Trays and stiffeners are not required unless desired for the package rigidity some products demand. All in all, there's less waste and fewer returns with products packaged on the Campbell Wrapper.



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Good News for Quantity Users

If you use large quantities of telescope cans, here is important dollar-saving news for you! Through new manufacturing techniques, R. C. Can is now able to bring you a brand-new price schedule. Here are the R. C. Metal-End Telescope Can specifications:

- Any size from 1/8" to 6 5/8" diameters
- Any length to 32"
- Spiral wound with metal ends
- Can be telescoped (divided) at any point
- Wide variety of greaseproof or moistureproof wrappings and linings.
- Spiral-wound labels can be applied with perfect label registration.

...and Don't Forget These Other Low-Cost R. C. Telescope Cans...

- Cuff End
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R. C. CAN CO. The Stamp of Quality ST. LOUIS, MO.

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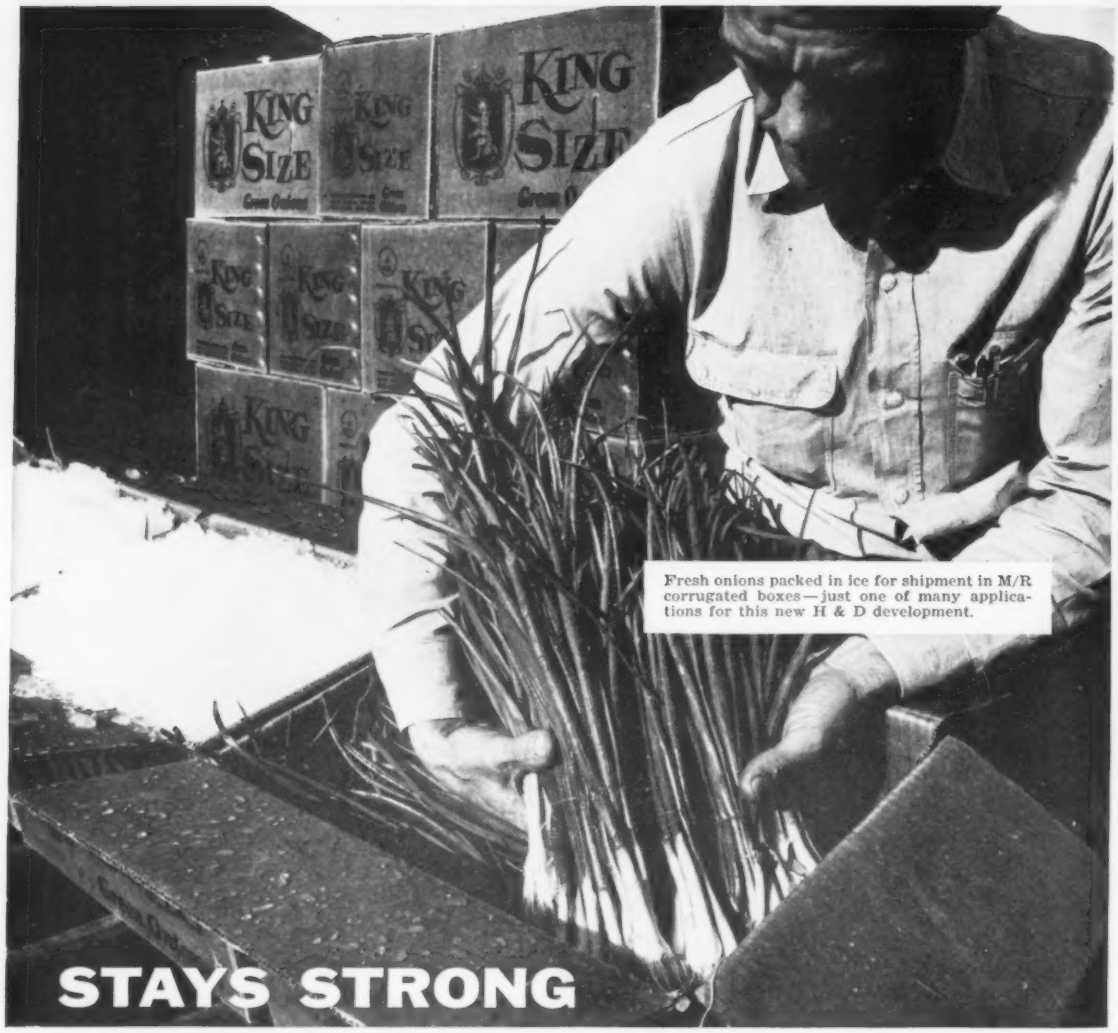

Fresh onions packed in ice for shipment in M/R corrugated boxes—just one of many applications for this new H & D development.

WHEN WET!

It's *M/R*® moisture-resistant corrugated developed by H&D

No product's too wet for corrugated boxes made of M/R board. Wax-impregnated M/R sheds water like a duck's back, stays strong and firm even when dripping wet. Produce, fruit and other wet product packers save money with this new Hinde & Dauch development.

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Please rush me samples and detailed literature on new M/R corrugated boxes.

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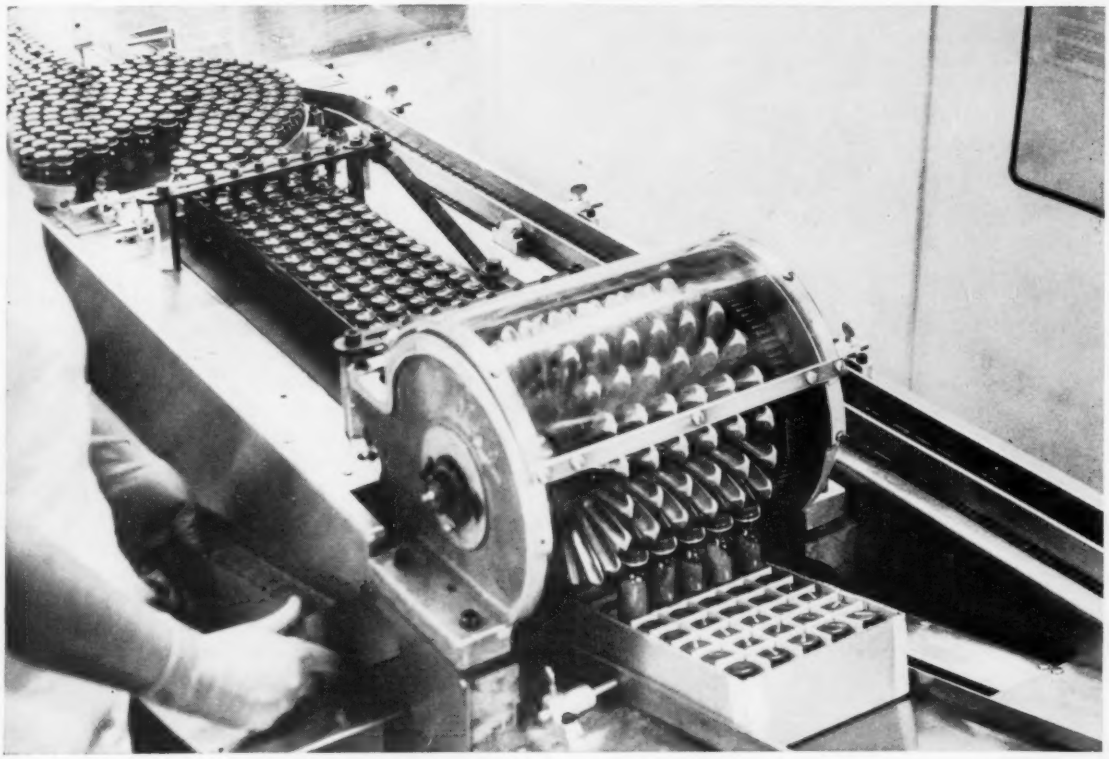

Fig. 1. It would take 20 workers to do manually what this Pfizer-licensed tray loader does. After bottles accumulate on rotary table at left, an oscillating separator lines them into five columns. Spacer wheel of loading head positions bottles to match tray dimensions.

A plant-wide approach to

Packaging machinery project coordination

When the same people plan, design, lay out, install, and maintain machinery, a company can complete its development projects expeditiously and avoid the confusion inherent in divided responsibility. There is an effective example of this at the Brooklyn plant of Chas. Pfizer & Co., Inc. This provides a continuity of engineering and development which Pfizer executives find particularly important because of having diversified production and packaging lines in space that must be used economically. And, since many projects must take place under conditions of production urgency, reducing the time necessary to finish a project proves highly desirable.

When the people who plan and design the machine also have to build it or supervise its installation, make it work, and maintain it after it runs normally, there is a continuous responsibility that pays dividends in speed and efficiency. While different individual specialists carry out these staff and service functions, there is a unity of control and direction so that those heading these activities work as a team, pinch-hit for each other, and

Fig. 2. Pfizer experts developed this five-tier case dumper to transfer bottles to washing equipment. Bottles from case drop from spring-loaded elevator which lifts trays, pushes them to unloader-conveyor belt. As girl removes trays, bottles are in upright position to enter washer.

keep specific projects moving.

Machine Development Laboratory

Key organizational feature of the carrying out of such projects is Pfizer's machine development laboratory. It furnishes parallel services of machine development, field engineering, maintenance and changeover. This laboratory develops new packaging equipment, new packaging and package devices, and machine modifications. It provides skilled help in fabricating machine parts in emergencies. It has produced many unique machine modifications, as well as specialized pieces of equipment. Its field engineering group investigates new equipment, revises and approves existing layouts, and plans and installs new equipment. Machinery maintenance in the Pfizer organization is a service responsibility. It looks after all compounding and packaging operations on a basis of equal attention.

Use Systematic Approach

Through experience with many projects, Pfizer engineers have developed a systematic approach to these activities. **Usually they break a proposed project or such a packaging operation down into basic motions or phases.** They avoid initial or preconceived ideas of how to accomplish a project. They study these basic motions, seeking the best approach. Typically they ask themselves two key questions: (1) Will there be the most economic use of space possible? and (2) can product and packaging materials move to it and finished packages away from it? If the answer is "yes" to both questions, they go ahead. They know from experience that if they can meet these immediate objectives, they can do the rest of the job.

After working out basic motions and reviewing equipment possibilities (they use what equipment they already have in the plant if possible), they draw a plan to see if they can attain their objectives within the area available.

Conscious Of Space

Operating a multi-story plant in a confined city location under conditions of high-speed production and a diversified product line poses many difficulties. Obviously they do not consider every project in terms of square inches available. The point is that these experts are not only speed conscious, but also are very much *space* conscious.

Whether needed equipment is built to their specifications by an outside manufacturer, built in the plant shops, or represents Pfizer's own modification of a commercially produced machine, its installation and use follow a definite pattern. The field engineering group checks dimensional and layout requirements so that a projected piece of equipment ties in with the rest of the operation. They also check electrical and other service or utility needs.

Whether in a supplier's plant or Pfizer's, the new machine goes through an extensive trial run. Meanwhile, field engineering people prepare the layout for the new equipment or line. They follow accepted practices where possible. In short, they arrive at the ideal "on-paper" plan for the new equipment —consistent with space limitations and production requirements.

On-The-Spot Adjustments

At this point the real value of a coordinated, streamlined approach shows up. As every plant

Making one group of people responsible for packaging machinery from "paper and planning" stage all the way through operation and maintenance results in faster completion of projects, far less time lost due to "coordination and communication." Here is a review of how Chas. Pfizer & Co., Inc. approaches this, showing how machine development, field engineering, and changeover and maintenance forces work together, give constant supervision and coordinate details smoothly.

manager knows, the theoretical, paper layout and actual floor and machine conditions seldom coincide. It is often necessary to make substitutions and changes in positioning—on the spot.

The Pfizer experts have a knack of making spot decisions regarding what to move. Because of their experience and the combination of talent present in these individuals, they save a lot of time by adjusting a layout to practical conditions without having to re-do the layouts on the drawing board.

Where one man or one group has continuous responsibility for a project, he or they are right on the spot all the time. This is very important when the project is so urgent that there is no time for detailed layout drawing. Often they merely get onto paper just enough information to go ahead. Then they decide approximately how to do the operation.

Hand in hand with this is access to management for prompt decisions. If a company expects machine development and field engineering people to accomplish their work quickly, it must provide them channels for getting prompt answers to questions and even spot decisions regarding alternate ways of doing some phase of the project.

Test, Train At Once

Once equipment gets into place on the plant floor, there is another opportunity to save time. **The Pfizer specialists test the new machinery and train the workers in its use at the same time.** Just as soon as equipment units go into place, the engineering people hook them up, pipe in the utilities, and prepare them for testing and operation.

The machine development laboratory has primary responsibility for testing all equipment. However, it invariably invites production representatives to participate so that the people who will run the machine gain experience with it. These experts point out that it is a mistake to let a development group come up with a machine, put it on the floor, and summarily drop responsibility for it into the hands of a production force.

Therefore, machine development laboratory representatives are on the floor at all times. **Although production people do participate, the basic responsibility for worker training on a new operation rests with the machine development people.** This relieves the production staff of having to carry out the initial training burden and frees them for their main job of getting out production.

The laboratory people are quite skilled at "debugging" machinery. Whether a unit is built by an outside manufacturer or built within the Pfizer organization, the laboratory specialists usually have worked with its prototype. Therefore they are quite conversant with the production machine when it goes on the floor.

Further, they make sure they have the necessary machine parts on hand at the launching date of the given line or operation. Sometimes the plant itself must build parts that it cannot reasonably expect a machinery manufacturer to furnish in time for an urgent need.

Costs Show Performance

Although production people are relieved of primary responsibility for machinery as such, they have an obvious interest in its performance. These experts acknowledge the importance of machine performance as a major factor in any production operation. Further, members of the Pfizer team read-

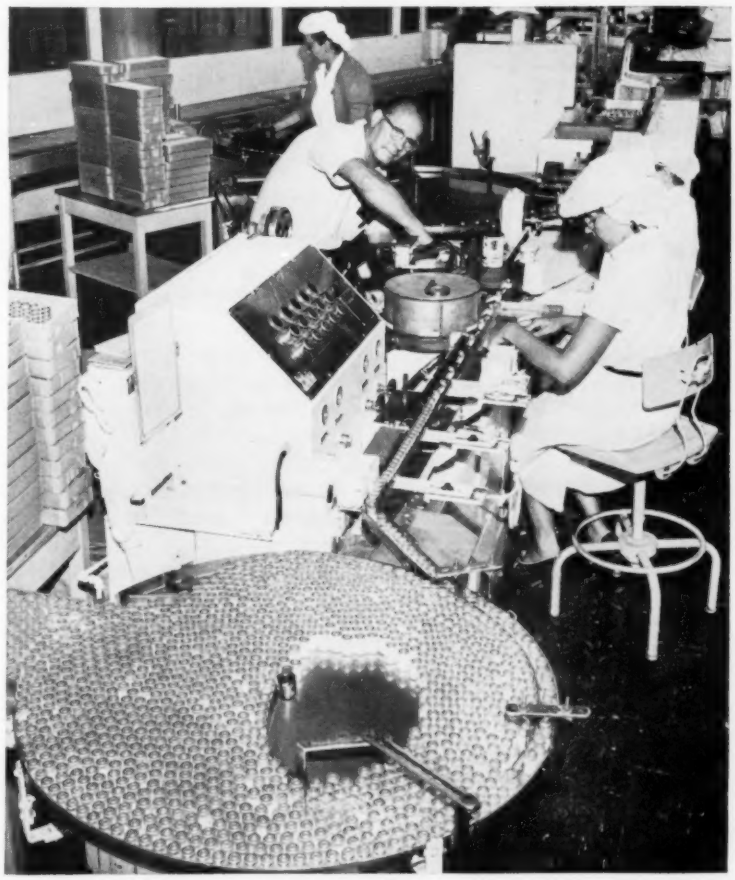

Fig. 3. Major feature of Pfizer packaging machinery supervision is providing adequate floor supervision and maintenance during shift operation. This mechanic is adjusting, while equipment is running, label pick-up apparatus on one of Pfizer's high-speed labeling and cartoning lines.

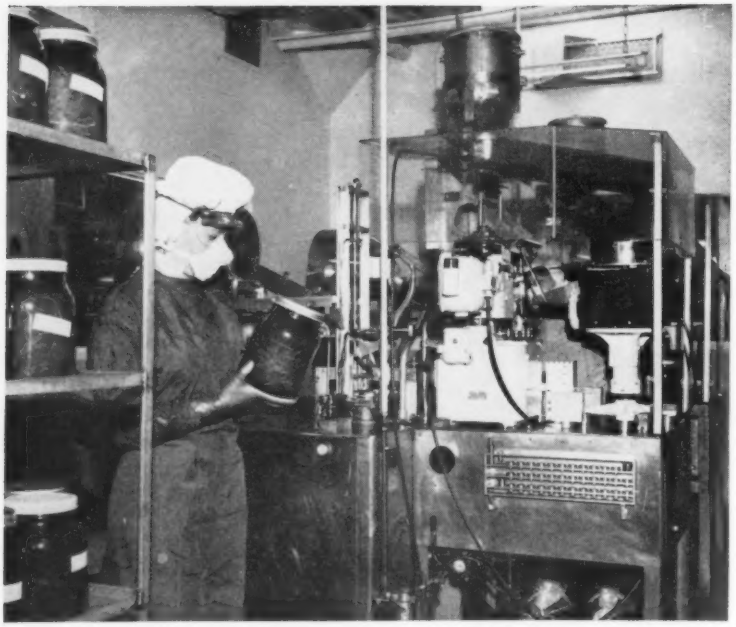

Fig. 4. This one machine fills, seals and affixes sterile needle to Steraject disposable cartridge. Developed and patented by Pfizer, this machine automatically loads cartridges into holders, fills them by metered measure, rolls on seals, then discharges cartridge to reject or finished goods chute.

ily see how performance immediately reflects in standard costs. Since these standard costs are the yardstick by which management measures supervisory performance and ultimate reward, the supervisors are quite conscious of the equipment efficiency in their respective areas.

Probably the standard cost system and the individual supervisor's responsibility for these costs represent the best possible stimulant for early attention to machinery that is not doing its job.

But actual responsibility for the machinery rests with the machinery people. There is a floating group of mechanics available at all times, thus providing constant mechanical supervision. Pfizer executives point out that it is cheaper to have mechanics on the spot than to have to call them from some other area or building. Likewise, there is an oiler force that reports to the machine development laboratory. Attention to their work is continuous. There is a signal light system and when a machine attendant turns on her trouble light, a mechanic responds to it at once. This literally saves minutes—these can be critical during a close run.

Keep Production Informed

Pfizer has a preventive maintenance program. Reports of downtime and difficulties plus the cumulative experience in its maintenance organization enable its people to do an effective forecasting job. They predict quite accurately when major overhauls or replacement parts are likely to be necessary. Accumulation of information about a given machine's performance lets them anticipate breakdowns. Similarly, they can schedule maintenance work for convenient times, such as late shifts, weekends, or during the annual plant vacation.

Set-up and changeover men function under the machine development laboratory. They are mechanics and make minor repairs. These men are in the plant area at all times and are quickly available in case of machine trouble. Also, the set-up men do some spot oiling to augment the service of the regular oilers.

Informality Pays Off

Having a system of continuous responsibility permits working with flexibility and informality. For example, those in charge of machine development, field engineering, and set-up and maintenance can alternate for each other. If one is absent or on vacation, one of the other two can assume his responsibilities, make decisions in his absence, and keep his work running. This system has proven effective.

Giving this sort of latitude induces good relations. Members of the Pfizer organization do business as informally as possible. They readily admit their occasional mistakes, for instance. They are eager to get on with the job. This sort of "give and take" avoids the tendency to pinpoint responsibility on one individual or another, as is more likely to be the case where there is a highly formalized organizational structure.

At weekly production meetings the heads of machine development, field engineering, and changeover and maintenance meet with the production department supervisors, assistant department heads, representatives from purchasing, production control, and the packaging group. They discuss problems, settle dates, and coordinate projects. Sometimes these meetings run 90 minutes, with three or four pages of agenda. **Having an informal system does not mean that items go neglected.**

Departments Cooperate

These activities cut across other departments in the company. For example, the machinery people work closely with the quality control group in regard to performance of packaging materials. They have a knack of quickly and amicably settling the usual sort of problem that arises where acceptance of marginal or less than top standard material is necessary in order to meet urgent production needs.

Both sides have assimilated a reasonable amount of the other's background and viewpoint. As a result, they have a basis for understanding and compromising.

Similar problems arise in dealing with outside suppliers. For example, in purchasing machinery the Pfizer experts want to be sure that suppliers fully understand the modifications requested and the materials asked. Requirements often call for stainless steel, polished aluminum, and chrome-plated surfaces rather than paint. Although of higher initial cost, maintenance cost is less. Therefore, they try to incorporate these materials into their equipment. Working out details such as these, demands a close relationship with suppliers.

Develop An Operation

One illustration of how all this ties in from the planning stage to actual production is a high-speed powder line developed to handle both powders and liquids. Starting point of the project was that the dimensions could not be increased. It was originally laid out for the only existing equipment that could then do the job. At that time, production requirements were less than they are now. As requirements increased, the plant had to find ways of using the same space to turn out greater volume at higher speeds.

First attention went to a sealing and filling operation for use in a highly confined area. The machinery development group installed a new powder filler. Next they re-engineered the manual stoppering operation. They found that the stoppering was holding down the line speed, so they installed mechanized stoppering. In the course of doing this, they developed the so-called "Combination Seal." In this the stopper and seal are one. The application takes place in a sterile area. Both operations are done mechanically rather than manually.

Sought More Speed

An initial speed of 60/min. has been speeded up to 160/min. In spite of minor changes, the operation proved too slow for requirements. During an intermediate stage, there was developed a sealing machine to take the output of the filler. It is a rotary sealer and is covered by a Pfizer patent application, even though an outside supplier built it for the company.

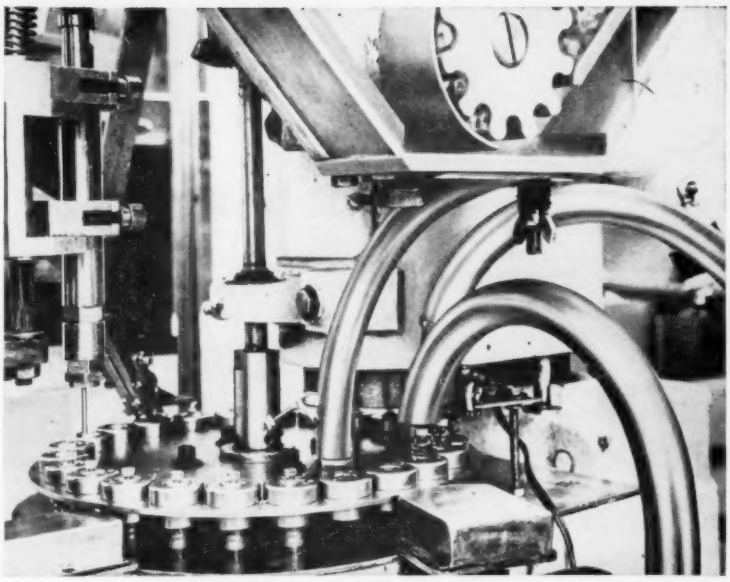

Fig. 5. Tube (center) puts cartridges in dial plate. Upon rotating to left, cartridge is filled by pump, activated by detection device (left foreground) then is sealed. Correctly sealed vials are blown through finished goods tube (center foreground), incorrectly sealed ones through reject tube (right foreground).

Next focal point was development of a feeding and reject mechanism. Every stoppage meant loss of production. Production demanded foolproof seals and these had to come down oriented virtually 100 per cent.

Seeking larger capacities, they developed a metering device. Plant equipment now handles products in five 20-kg. bags and can feed two heads simultaneously on a single machine. This is the sort of operation where the product itself is fed to the packaging equipment from a bag without coming in contact with the hopper. It takes place in a sterile area. By having a single feed go into two hoppers, if one head is down, the equipment can run on the other head without interruption.

Using Corrugated Trays

These packages are filled, sealed, and completed in the sterile area. However, they are not labeled immediately. Rather, they are segregated by lot number and go into trays with dividers and then into boxes of 500. For a time, this was done manually. Its mechanization has been in operation four to five years. At one time there were 30 workers along two tables to put this production into corrugated trays. Now it takes place mechanically and one girl supervises the specially-built machinery that automatically loads finished packages into trays.

At one time there was manual taping of corners of the corrugated trays. Now there is a machine that does the corner staying operation. It uses far less tape than was necessary during the manual taping.

Another typical project of the machine development laboratory includes an overhead hoist serving four fillers. Each metal can carried by this hoist contains 20 to

(*Continued on Page 82*)

Four points in . . .

Selecting a pressure-sensitive tape

Construction

Definitions

Selecting tape

Simple test methods

By Carl E. Frick,
Technical Manager,
Dutch Brand Division,
Johns-Manville Corporation,
Chicago

With over 500 types of pressure-sensitive tapes available to the users of packaging materials, it is important to determine which will function best for a given instance. This is not difficult to do even though these tapes come in an almost limitless variety of materials, sizes, and colors, combinations of which may be used for different applications.

What is a pressure-sensitive tape? Everyone is familiar with cloth "adhesive tape" used for bandaging that cut finger. This tape is one of the oldest forms of pressure-sensitive tapes.

The term, "pressure-sensitive," designates a category of adhesive tapes which, in solvent-free form, are tacky and adhere to a variety of surfaces by mere contact without the need of more than light hand pressure. No water, solvent, or heat is required. This does not mean, however, that every pressure-sensitive tape will "stick" permanently to every surface; thus, the importance of knowing which tape to use for a specific packaging job.

Tape Construction

Basically, these tapes consist of a backing material and an adhesive. (See Fig. 1.) The backing may be of paper such as kraft, either creped or flat; of textile materials like cotton (woven—both high and low thread counts), rayon, or nylon; plastic types such as vinyl, polyester, cellulose acetate, or cellophane. Combinations of these may be used depending on the end-use of the tape.

Resin is important. On one side (inner) of the backing, a permanent bonding agent is used, to which is applied the resin and plasticizer (known as "tackifier"). This bonding agent is frequently a rubber polymer. It might be natural or synthetic rubber. The resin and plasticizer make up the adhesive portion. This resin is one of the important ingredients, as its melting point determines the "working temperature" of the finished tape. The adhesive can be applied in liquid form from a solvent solution or latex-water dispersion, or in dry form by rubber calenders.

Has releasing agent. The outer side of the backing material is usu-

With all the many different types of pressure-sensitive tapes available, one may be puzzled as to which tape he should use for a certain application. According to Dr. Frick, it is not difficult to determine "which tape." Giving some helpful hints in tape selection, he describes its basic construction, acquaints one with the vocabulary of the tape manufacturers, and gives some simple test methods which apply to pressure-sensitive tapes. These methods are modifications of standard tests, and require very little laboratory equipment.

ally coated with a solution of some sort. This acts as a releasing agent to make the tape unroll easily from its coil.

To increase a tape's strength, it may be reinforced with such materials as strands of glass, rayon, or nylon. One problem with glass strands is that the glass sometimes shatters under extremely heavy loads. Rayon has little elasticity, but holds up better. The reinforcing material is usually applied between the bonding agent and the adhesive. As an example of increased tensile strength, a tape can be made to withstand a force ranging as high as 500 lb/in. of width.

Definitions

Before going into some pointers for the packaging engineer in selecting the right tape, some of the definitions which apply to pressure-sensitive tapes will be helpful. These are as follows:

1. **Adhesiveness (adhesion) is the ability of a tape to stick properly to the surface on which it is to be used.** If it does not, it will not do its job satisfactorily. Not every tape will stick to the same surface. In fact, a tape which is quite sticky to the hand may not stick at all to some types of surfaces. In contrast, a tape which does not feel at all "sticky" to the touch will make a very strong bond with certain surfaces. This is a good reason why **one must never judge a tape by merely trying it on his hand.**

2. **Quick-stick or quick-tack** (formerly called tackiness) **is different from adhesion in that it is the tape's ability to stick to something immediately upon contact.** It is the initial holding tack which causes "gripping" as soon as the tape touches a surface, but this does not necessarily mean that a tape is the correct one for a specific job. **Adhesion, which is what counts, comes into action after quick-stick.** Overrated in its value, this term is of least importance in most instances. There are, however, times when it is important—such as when applying tape to a "soft" box or one which has "give" to it.

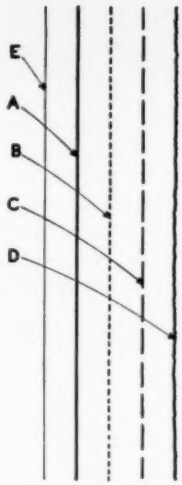

Fig. 1. Tape construction. Backing (A), bonding agent (B), reinforcing material (C), adhesive (D), releasing agent (E).

3. **Shear adhesion is the holding power of a tape, and is most important.** A tape may have good quick-stick and good adhesion. However, **if it does not have the power, under a constant load, to remain bonded to a surface for as long a time as is required by the package, it is not satisfactory.**

4. **Tensile strength of the tape is important. If the tape breaks before a package arrives at its final destination, its strength is not great enough.** The strength of a tape can be increased to a degree by increasing its thickness; for much greater strength, by reinforcing it with fibers.

5. **Elongation** is not too often a factor to consider. However, if the package to be sealed is of an irregular shape, and a great deal of wrapping is to be done, a tape with the proper amount of stretch should be used. This will result in a neater taping job and require less amounts of tape.

6. **Unwind tension is the force required to remove the tape from its roll. It is an important factor in the use of tape by the packaging line operators.** If a great deal of force is needed to unroll the tape, obviously, it will tend to slow down production.

7. **Thickness** normally is not important. However, once a certain tape has been selected for a specific application, thickness may be an item to check in your quality control program for incoming packaging supplies.

8. **Water penetration is the passage of water through the tape. This is an important factor when there is a chance that a package may come in contact with water, such as at sea or even in the rain.** During the war, there were instances when packages of supplies accidentally fell into the water, and in some cases, were dropped into the water to float ashore. Thus, if a tape is not waterproof when it should be, it may loosen, losing its effect as a closure for the package.

9. **Water vapor transmission is the passage of water vapor through the tape. This factor should be considered for a package which is going into very humid areas such as the tropics.** If the WVTR is high, again, the tape may loosen from the package.

10. **Working temperature is the temperature range in which a tape is applied to a surface and will remain adhered satisfactorily to it throughout the tape's useful life.** Most applications of tape are made at room temperature. One tape so applied may remain stuck at lower temperatures, even down to 0°F., but this same tape might soften

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and loosen if the package ends up in extremely high temperatures.

On the other hand, a tape designed with a high "working temperature" would hold up in the high temperature, but not necessarily when very cold. There are instances when products must be packaged and sealed at temperatures ranging from 32 to 40°F.—some meat products and deep-

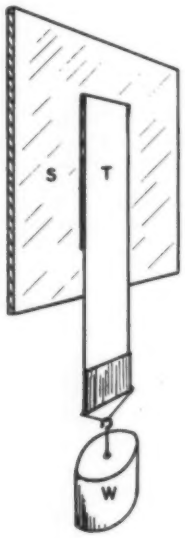

Fig. 2. Peel adhesion. Using weight (W), tape (T) is peeled at 180° from test surface (S). Results expressed in oz/in. tape width.

freeze items. Use of a special tape is required, of which the adhesive is least affected by low temperatures. At the other extreme, a package may be destined for the tropics in which case a tape to withstand tropical weather conditions must and can be selected.

Selecting The Right Tape

Performance tests of the completed package are more valuable to the user than the fanciest laboratory tests. No laboratory test is going to give end-results, although it can be helpful in narrowing down the number of tapes to test in the field. Also, it is wise to have laboratory tests to compare tapes on a relative basis, and to check tapes against specifications.

Know your application. In selecting the right tape, the packaging engineer must know specifically his application. He must **know how it is to be applied**—at low or room temperature, or higher; **where the package is going**—cold climates, humid areas, tropics, etc.; **how the package will be handled** in his shipping operation, in transit, and possibly by the ultimate retailer.

Make preliminary tests. With these facts, he should request samples of tapes from the tape suppliers, which they would recommend for the job. Prior to running large-scale tests under actual production and shipping conditions, the packaging engineer can make laboratory tests to compare the various sample tapes submitted. **This may very well eliminate some of the tapes, and cut down on the size of the large-scale tests, thus keeping test costs to a minimum.** (Some simplified modifications of standard tests for tapes are given in the last section of this article.)

In addition to the laboratory "bench" type tests, more practical tests can be conducted if the package can expect rough handling. A few packages can be made up, taped, and subjected to such tests as vibration, drop, tumbling, incline-impact, etc. **These will help to further eliminate those tapes which will not stand up during normal handling and shipping.**

During such tests, if there are signs of the tape's breaking or wearing away, a stronger tape, or one made of different backing material, may be required. If the tape "lifts" during the testing, a tape with a different adhesive probably is needed.

Today, many kinds of papers are used in cartons. Some are waterproof and contain waxy materials which make adhesion difficult. **Remember that it is best to test the tape on the surface to which it is to be applied, and under the exact conditions of temperature and humidity. The so-called "thumb test" (testing a tape's adhesion by the thumb) is almost worthless.**

Storage tests. Last but not least are storage tests. Temperature and humidity conditions to which the package may be subjected, should be simulated, and the taped package stored under such conditions for sufficient periods of time. It is usually not necessary to store the entire package with product unless one wants to subject the product to such conditions.

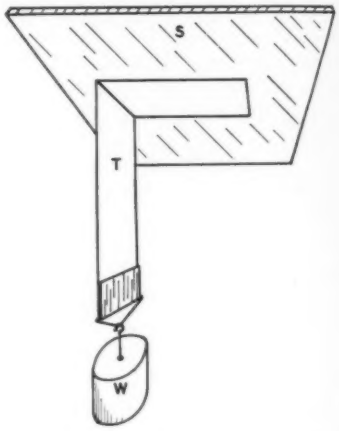

Fig. 3. Quick-stick. Using weight (W), tape (T) is peeled at 90° from test surface (S). Results expressed in oz/in. tape width.

A piece of tape applied to the packaging material under actual production conditions (temperature, humidity, etc.) can be used. **This point must be stressed: Be sure to use the actual material (fibreboard, plastic, etc.) of which the package is made, or the test may be worthless, since, as stated before, not every tape will stick to every surface satisfactorily; nor may it stick properly if not applied under the proper conditions for the specific tape.**

Simple Test Methods

These methods are modifications of standard tests, and most of them do not require any complicated apparatus. With these tests, one can obtain some very effective results.

1. Peel adhesion, or adhesive strength, is the force in oz/in. of tape width, required to remove a

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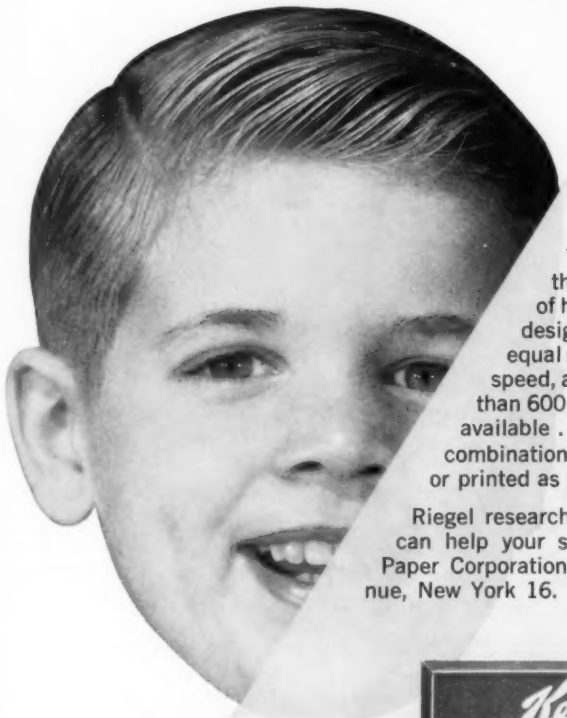

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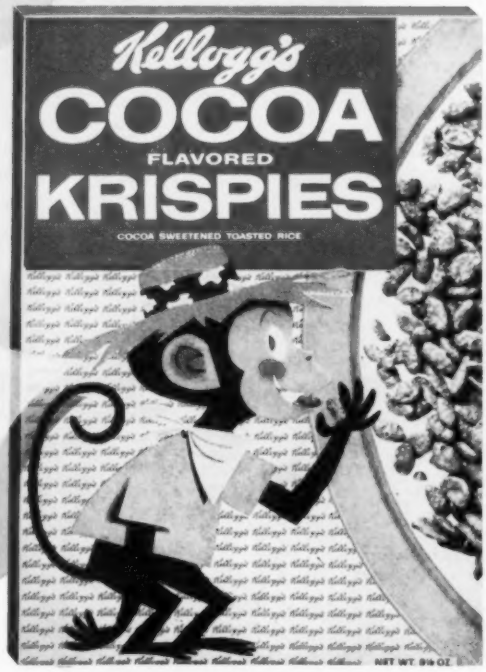

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strip of tape from a standard test panel. With a rubber roller, each strip of tape is applied to a clean plate-glass surface, using the same roller weight. With the glass plate suspended *vertically,* a suitable dead weight is used to peel off each strip at 180 degrees. (See Fig. 2.) Different weights should be used until the exact weight required to peel the tape off is found. By knowing the width of the tape strip and the amount of weight needed to peel off the tape, the peel adhesion can be calculated.

2. Quick-stick is the force in oz/in. of tape width, required to remove a strip of tape from a standard test panel. This is difficult to measure and a standard test method is still controversial. However, a tentative method measures the force resisting peeling of a tape at 90 degrees from a standard surface. Each strip of tape is applied to a clean plate-glass surface using no other pressure than the weight of the tape itself. With the glass suspended *horizontally* (taped surface down), a series of dead weights is used (as in the test for peel adhesion) until the exact weight is found which will remove the tape from the glass. (See Fig. 3.) The force is then calculated as before.

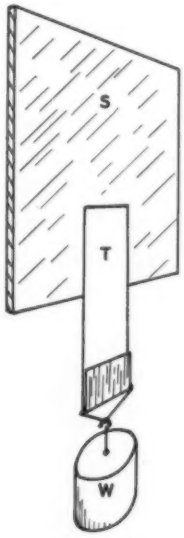

Fig. 4. Shear adhesion is the time required for a 500-gm. dead weight (W) to slide a ½ x1-in. area of tape (T) from test surface (S).

3. Shear adhesion is the time required for a 500-gm. dead weight to slide a ½x1-in. area of tape from a standard test surface. It is a method of determining the holding power in shear of a tape under constant load. This test can be set up very easily using the plate-glass surface as for the adhesion test, or a stainless steel panel, suspended *vertically.* Allowing the *exact* tape area shown above to contact the surface, the weight is attached to the tape, and the time recorded to slide the tape off the panel. (See Fig. 4.)

A more practical method which may be of much value to the user, is to use the actual surface of his package on which the tape is to be used, rather than the glass or steel surface. In this way, he knows exactly what a specific tape will do for his particular package. Also, if he knows that the package is going into high-temperature climates, it is wise for him to run this test for 24 hr. at an elevated temperature—possibly as high as 100°F.

4. Tensile strength is the force expressed in lb/in. of width required to break a strip of tape. Note that this measures the strength of the tape itself and not its strength of adhesion. A tensile testing machine is necessary to determine this accurately. For most tapes, the manufacturer can supply this information to you.

5. Elongation is the amount of stretch a tape possesses. It is measured at the time the tape breaks after being stretched and is expressed in percentage. This test requires a tensile testing machine, as the measurement is taken when the tape is being tested for tensile strength.

6. Unwind tension is the force in oz/in. of width required to remove tape from its roll. The roll of tape is mounted on a free-turning roller assembly. A sufficient amount of weight to remove the tape is applied. (See Fig. 5.) The length of tape unwound per minute is determined; or, the amount of weight may be varied until a constant length is unwound per minute. The unwind tension is then calculated.

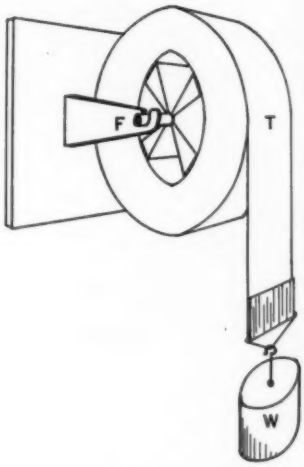

Fig. 5. Unwind tension. With tape roll on free-turning roller (F), using weight (W), length of tape (T) unwound per min. is determined.

7. Thickness is the distance in mils or inches between the two outer surfaces of the tape. It is measured with an ordinary micrometer.

8. Water penetration is the amount of water transmitted through a tape, and is expressed in gm/100 sq. in/24 hr. This test consists of applying a piece of tape over a specified size hole in the top of a water-tight vessel containing calcium chloride, and immersing the container in water using a 1-in. head. By weighing at known time intervals, the amount of water picked up by the salt can be determined. The water penetration can then be calculated. Specially designed equipment is needed for this test. (See Fig. 6.)

9. Water vapor transmission rate is the amount of water vapor transmitted through a tape, and is expressed in gm/100 sq. in/24 hr. The procedure for this test is similar to that used for most other packaging materials. It requires the

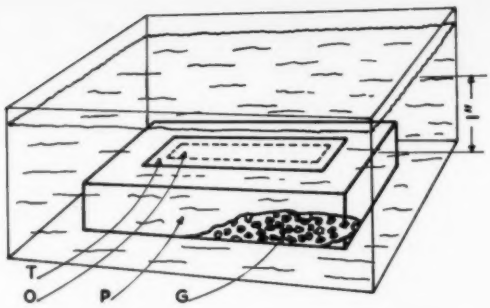

Fig. 6. Water penetration. Strip of tape (T) is placed over specified size hole (O) in top of water-tight vessel (P) containing calcium chloride (G). Unit is placed under 1-in. head of water to determine water penetration expressed in gm/100 sq. in/24 hr.

usual test cups and a conditioned storage cabinet such as the General Foods humidity cabinet.

If you have no laboratory or technical equipment of any kind, you may not be able to take advantage of some of these latter methods of testing. However, you can make such practical tests as applying the tape to the actual package to be sealed or reinforced, and test for performance.

This is an important point and should be stressed: That, although laboratory tests are helpful for some things, good, practical performance tests are of more value to the packaging engineer. Remember that the different tape suppliers manufacture various types of tapes for the same application. For this reason, the end-decision should lie with you as to which one meets your requirements. *(End)*

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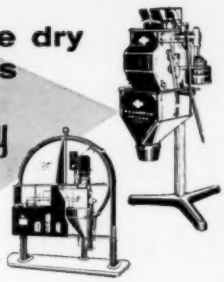

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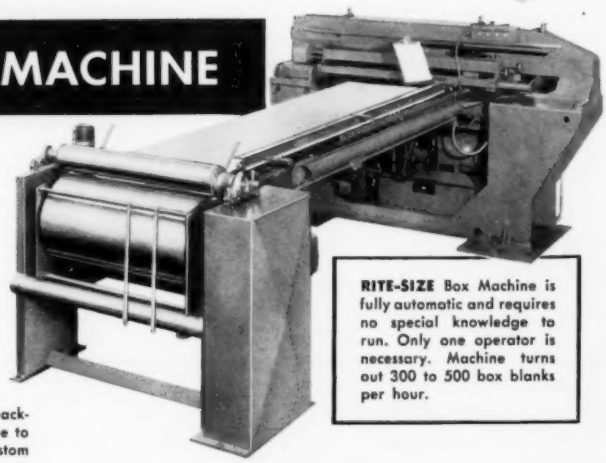

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Four guideposts to accurate piston filling

- *Proper filling tube diameter*
- *Adequate "sealing" of piston*
- *Correct "bottoming" of piston*
- *Absence of wear around valve*

By Albert R. Stevens,
Vice President,
Elgin Manufacturing Company,
Elgin, Illinois

The simplicity of piston filling equipment and the ease of adjusting it sometimes obscure the basic physical principles on which its successful operation rests. Those wishing to make the most of the inherent accuracy of piston filling must heed these principles. In most cases inaccurate and non-uniform filling stems from four basic causes. Although machine maintenance and part replacement can correct these deficiencies, those responsible for filling line operations will find it helpful to keep in mind the basic physical principles involved.

A brief review of piston filling may orient one's understanding of the principles underlying the machine functioning and the causes of filling inaccuracy and variation. Typically, there is a reservoir or manifold of product—usually positioned above the filling station. Whether the product flows from an overhead storage or supply tank or is elevated to the filling hopper from a location below machine level, the main point is that the liquid moves down into the valve.

A three-way valve permits (1) flow of product from the hopper to the piston cylinder, and (2) flow from the piston cylinder to the filling tube. Since the length of piston stroke is cam-controlled, it cannot vary unless the setting of the cam is changed.

Cycle Of Filling

On the backstroke of the piston, the valve is in position so that the product is drawn into the cylinder by the retracting piston. Next, the valve changes to the down-flowing position, and the forward stroke of the piston pushes the product down into the filling tube, and hence, into the container below it. The cycle then repeats. (Note that between cycles there is an instant during which the valve is in closed position to both reservoir and discharge.)

But the product pushed by the forward-moving piston into the filling tube first displaces the product in the filling tube into the container. At the completion of the filling stroke, the same amount of product will be retained in the filling tube. **A fundamental point of piston filling is that the filling tube be full of product at all times.**

Even though the fill of product into a container stops when the piston's forward stroke ends and the backstroke begins, product remains in the filling tube—in spite of the tube having an open end—and does not flow out except under one of the conditions described in connection with the four principle causes of inaccurate filling.

How Principle Works

For example, if you immerse a soda straw in a bottle of soft drink, place your thumb over the open end of the straw, and then lift it (keeping your thumb in place), the product stays in the straw. This is exactly what happens in the case of the filling tube on a piston filler. Atmospheric pressure provides a holding action and is constant. However, all this assumes

Getting accurate fills with a piston filler demands adherence to basic principles of physics. Mr. Stevens points out that, however important may be the proper use and maintenance of equipment, uniformity and accuracy of fill require a full filling tube at all times. In this searching discussion he explains why this is so, and he reviews methods of overcoming four basic causes of inaccurate filling: (1) Filling tube must be of correct diameter for the product; (2) adequate sealing at the piston is necessary; (3) there must be a bottoming of the piston, and (4) the absence of wear around the valve is necessary.

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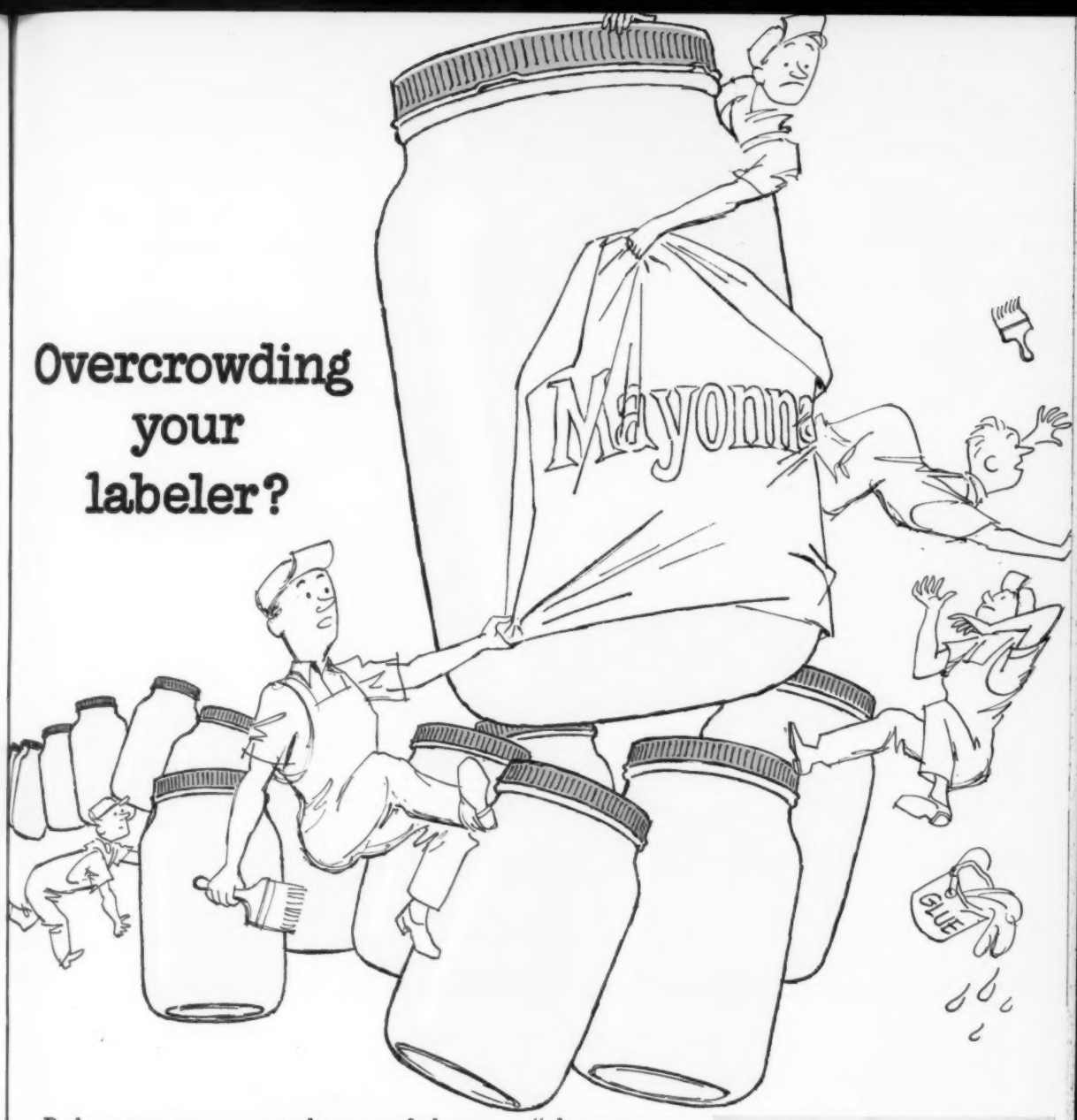

Perhaps you are . . . or perhaps you feel you can "*always* run another shift." Ever think of what that "catching up" costs? It's a hefty price to pay for something you can have in the first place.

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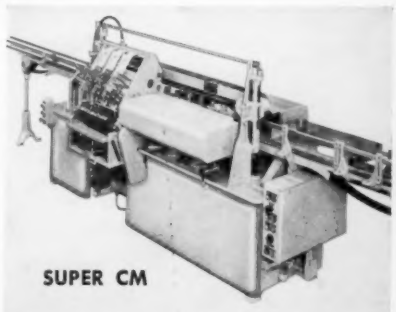
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For more information write direct to manufacturer

Albert R. Stevens is a graduate of Babson Institute. Following his graduation, he joined Elgin Manufacturing Company. Serving it in various capacities, he became a vice president in 1951. Active in the work of Packaging Machinery Manufacturers Institute, Mr. Stevens is third vice president of this group and is chairman of its 1959 show.

that the filling tube is of correct diameter with relation to the nature and viscosity of the liquid being filled.

In other words, to gain a correct application of the basic physical principles, **it is necessary to have the correct filling tube.** One that is too large simply does not hold the product. In other words, its use prevents the operation of the physical principle.

1. FILLING TUBE MUST BE OF CORRECT DIAMETER FOR THE PRODUCT

Thus our first cause of inaccurate and variable filling is a failure to use the correct filling tube. To overcome this you need just the right one. If the tube is too large with relation to the nature and viscosity of the product, it flows or dribbles out of the filling tube, due to a lack of surface tension, and the result may be an emptying or draining of the filling tube. The trouble is that, when such a flow starts, it cannot be stopped. The liquid continues to run out, thus draining the filling tube. The operational result of this is that a varying amount is pushed into succeeding containers each time.

Choice of a correct filling tube depends entirely on the nature of the product being filled. While there are standard diameters from which to choose, it is sometimes necessary to use supplemental aids. Even though a well-designed filling tube has an inner lip which serves to retard unwanted flow of product, it may still be necessary to use screens, discs, and similar supplementary devices to be sure that filling tube conditions are conducive to correct application of physical principles and give proper retention of product in the filling tube at all times.

Watch Product Viscosity

Successful filling rests on being able to hold the liquid in the tube until it is pushed out as a result of the piston pushing additional liquid into the tube. Viscosity, presence of solids, temperature, product variation—all these have a bearing on the choice of tube. Packagers sometimes forget that a change in temperature of a product gives an accompanying change of viscosity. For example, a syrup that fills properly with a given tube at 110°F. does not fill correctly when heated to 190°F. and fed through the same filler. And regardless of the product, the filling tube must be correct for it. Careful experimentation will lead to the correct choice of tube.

2. ADEQUATE SEALING AT THE PISTON IS NECESSARY

A second cause of filling inaccuracy and variation results from an absence of an air-tight seal between the piston and the cylinder wall. If you do not have this seal, there will be a siphoning action. This means that one end of a supposedly air-tight circuit is exposed and open to the atmosphere.

Air may get in between the piston cups and the cylinder wall. When you start pushing product through the valve on the forward stroke of the piston and there is not a tight seal, this is what happens: Product squirts out past the piston, squirting in the opposite direction to the forward movement of the piston. What happens is that, just prior to the squirting action, the machine, in effect, is drawing air around the piston.

Air In, Product Lost

Whether a machine has cups, rings, or some other means of sealing, **there must be a tight seal.** If you do not have a tight seal, in effect, you are measuring air. This

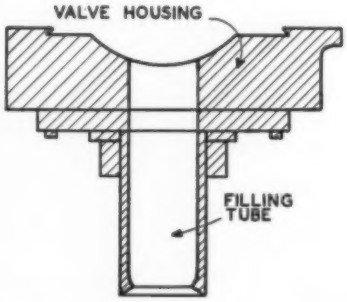

Fig. 1. Filling tube must be correct for product. If too large, (e.g., for product viscosity) it fails to hold product in tube.

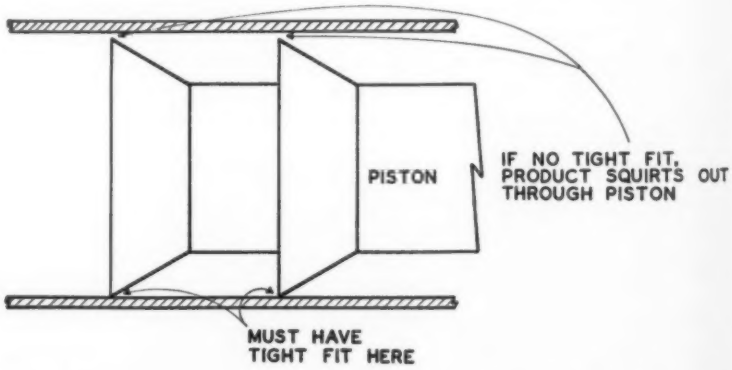

Fig. 2. Tight seal is necessary at piston. Leak means air goes in on backstroke, and on forward stroke, product (instead of going out properly) squirts out past piston in opposite direction of stroke. Siphoning results from lack of seal between piston cups and cylinder wall.

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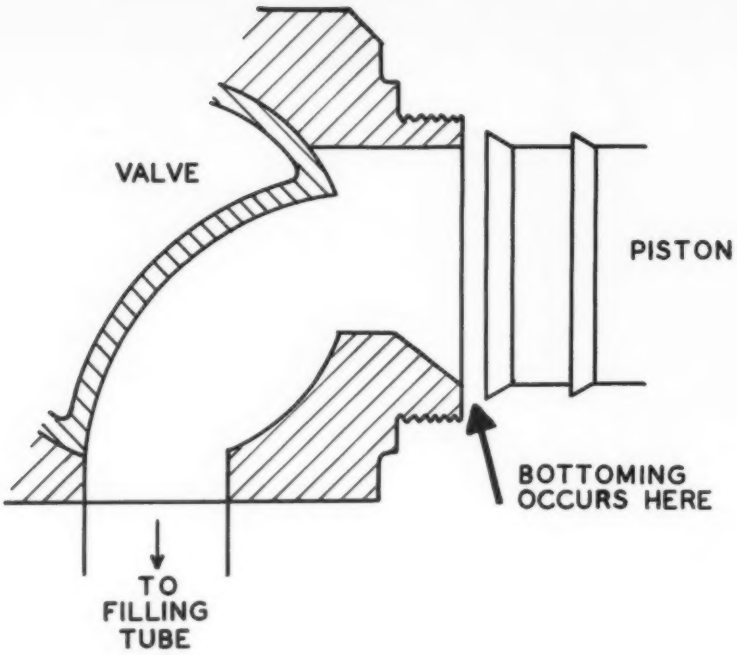

Fig. 3. In extreme forward position of stroke, piston should "bottom" — coming to stop no more than ⅛ in. from valve housing. If there is no bottoming and piston stops greater distance away from valve housing, added weight of product not pushed out may cause drain of filling tube.

air goes in on the backstroke of the piston, and the product goes out on the forward stroke—the product that is being lost through the squirting action. In other words, the fill to the container on that particular stroke is the amount of product, plus the air injected and minus the product lost as a result of the squirting action. Remedy for this is to maintain a tight seal—which is so simple and inexpensive to do that it is sometimes overlooked.

3. THERE MUST BE A BOTTOMING OF THE PISTON

A third source of variable and inaccurate filling may stem from not having a bottoming of the piston. "Bottoming" means that the piston, when in extreme forward position, is right up to the valve housing. It should go directly to the end—at least within ⅛ in. of it. This means that the piston cylinder should be cleared of product with each revolution of the machine.

If there is an improper adjustment, the piston is not bottoming and the cylinder is not emptied on each motion. For all practical purposes, a ⅛-in. adjustment represents an adequate bottoming. However, packagers sometimes neglect to maintain this, and filling deficiencies as much as 2 to 3 oz. sometimes take place.

No Bottoming, Drain May Start

Relating the bottoming action to the functioning of our physical principles, what happens is that the added weight of the product which is not pushed out because the piston is not bottoming may be enough to start a draining of the tube. The valve closes with reasonable speed; in fact, it is usually a rapid closing. However, there is a momentary dwell.

This dwell means that, for an instant, the product resting in the piston cylinder is pushing against the product in the filling tube. **This added weight can start** a drain during the momentary or instant dwell, and, as noted above,

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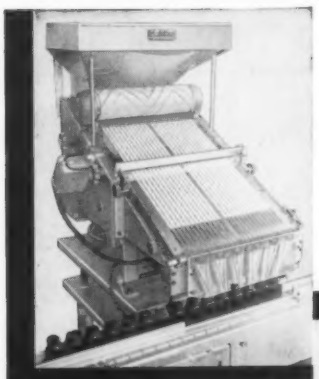

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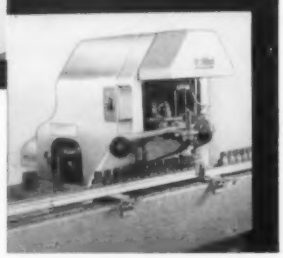

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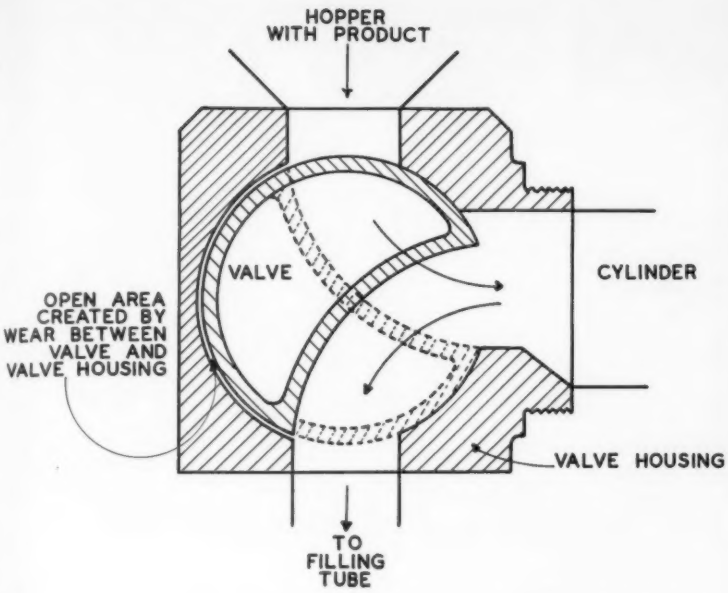

Fig. 4. If there is wear around valve, flow of product, seeping from hopper through area between valve and valve housing, may cause draining of filling tube. Many liquids apparently viscous are sufficiently thin to seep through area around valve — if there is wear.

once the drain starts, it cannot be stopped. It continues to drain until the filling tube is emptied. Maintaining correct bottoming of the piston will avoid this source of difficulty.

4. LOOK OUT FOR WEAR AROUND THE VALVE

A fourth cause of filling difficulty is the fit between the valve housing and the valve plug. If the valve itself is worn, there can be a seepage of product on the inside between the valve housing and the valve plug. This is especially true in the case of a thin product. Obviously it could not take place with anything of a consistency such as peanut butter or a similar product. But many liquids are sufficiently thin to seep through this opening.

What happens is that the small amount of seepage from the filling hopper, down and around the valve (when closed) to the filling tube can be just enough to start a draining of the tube. In effect, it may be the straw that breaks the camel's back. Maintaining the valve in good condition should prevent this difficulty.

Keep Filling Tube Full

Reviewing all four of these causes of inaccurate and variable filling, the common denominator becomes apparent: **The reason they cause difficulty is because they contribute in one way or another in failing to keep the filling tube full of product at all times.** Whether by wrong choice of tube or by providing conditions that contribute to a draining of the tube, the result is the same. The tube is not kept full, and accurate filling does not take place.

Recognition of these basic physical principles and an understanding of them in connection with the maintenance and adjustment of piston filling equipment should prove conducive to accurate and uniform filling. It is sometimes surprising how little attention is necessary to keep the filling tube full and to take these steps leading to accurate filling. Once the basic principles are understood it becomes second nature to take the steps necessary to support and meet the demands of these principles. The reward is accuracy and uniformity of fill. *(End)*

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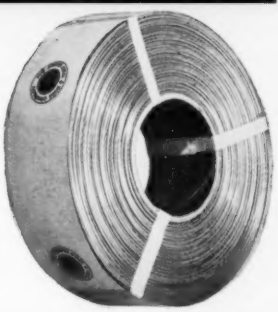

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Fig. 1. Five filling lines discharge their cartons onto this heated dead plate. Filled cartons are swept from its 3-ft. length in single file by a flight conveyor. One inspector is always here, but her main task is resting after 30 min. of rapid checkweighing.

Fig. 2. Location of the 150-watt heating lamp (arrow) above weighing hopper of automatic scale. This one lamp is ample to prevent the gradual build-up of the frying oil at the cut-off points, and prevents bridging of product as well.

Making high temperature prevent packaging line slowdowns

Waxed paper or board, or greasy products, do not slip easily when they are in contact with a solid material the temperature of which is below the congealing point of the wax or grease. The remedy for such a situation is so simple that it hardly needs mention: *Keep the temperature high enough* and there will be very little sticking.

Waxed paper-wrapped packages, sliding on a solid surface, especially metal, can give no end to jams and stoppages in a wrapping machine; likewise, on transfer plates from one conveyor to another. Also, some greasy products in some types of fillers can become "bridged" in the hoppers when the grease is congealed. By simple applications of heat at stategic points on its packaging lines for French fried potatoes, the Snow Flake Canning Co., Corinna, Maine, has solved those annoying problems, thereby increasing the efficiency on its lines with practically no additional operating costs.

Waxed paper wrappers can give no end of trouble in the wrapping machine if the latter is too cold. Another place where sticking can be a problem can be the dead (or transfer) plate where waxed cartons or waxed wrapper covered packages transfer from one conveyor to another.

The problem in the latter case can be particularly annoying when the packages are large and rather light in weight, e.g., a 9-oz. package that is 4×5¼ in. **Snow Flake Canning Co., Corinna, Maine, solved the problem by installing electric heater coils underneath the**

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All Colton-Hope machines will be engineered and manufactured in the Michigan plants of Arthur Colton Company. The combined facilities and experience of the two great pioneers will further expand the special applications and engineering services always provided by both companies. Sales and service will be handled by an augmented Colton staff.

This important acquisition is the fourth by the Arthur Colton Company since it became a division of Snyder Corporation in 1949, all aimed at developing and marketing better high speed machinery for the packaging and pharmaceutical fields.

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dead plate as shown in Fig. 1. In this instance, the temperature of the dead plate is kept above the melting point of the paraffin wax, and it is painfully hot to the touch. Absolutely no sticking occurs now, but, before the heater was installed here, the jams were plentiful.

Cut Sticking At Filler

Still another place where proper temperature control prevents sticking is found in filling of greasy materials. At this same plant (its principal product is French fried potatoes for freezing in the packages), the warm product will slip down hoppers and chutes; when cold, it is apt to bridge in filling machine hoppers and thereby cause inaccurate fills or else delays.

Bridging is prevented by keeping the surface temperature of the French fries above the melting point of the oil in which they have been fried. There is always a certain amount of frying oil left on each piece of potato. Thus, if the equipment temperature is too low, the oil build-up may present a difficult problem in the course of an hour or two of operation.

Sticking is prevented here by directing the radiant heat from 150-watt heating lamps mounted above the hopper in such a way that the "strategic locations" are kept warm enough to avoid all tendency to cling. Their location is shown in Fig. 2. Without their use, the filling operation is irregular and a decided annoyance.

Cost of electricity in this service is so small that it is almost negligible. Assuming a power cost of \$0.02/kw.-hr. and a line speed of 1,000 pkgs/hr., the cost of operating one 150-watt lamp would be as follows:

$$\frac{150}{1000} \times 0.02 = \$0.003/\text{hr.},$$

or

$$0.003 \times 0.001 = \$0.000003/\text{pkg.}$$

Most factory people will regard this as a very small price to pay for freedom from line delays from this cause. (*End*)

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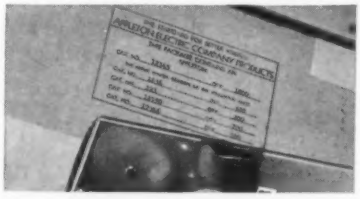

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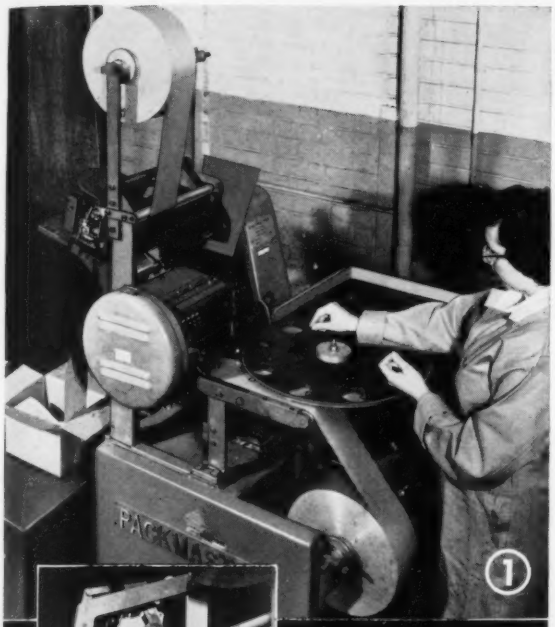

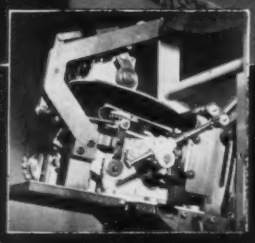

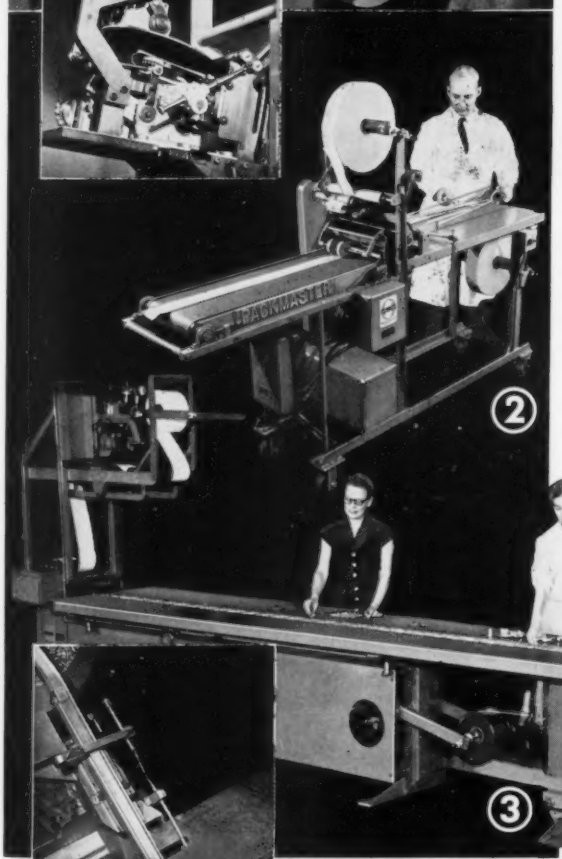

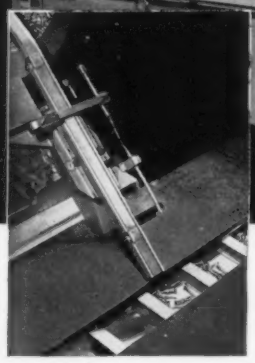

Here's the Sure Way to Cut Costs with Automatic Packaging

For an automatic packaging line to be a real cost-cutter, these three factors must be present: (*1.*) The machine must provide customized packaging without requiring major engineering outlays; (*2.*) it must be designed with flexibility to accommodate product redesigns or to handle runs of a variety of products; (*3.*) it must provide a quality package at a high hourly rate and low cost per unit.

Three basic models of Sundstrand-Packmaster machines enable you to choose standard machines that meet all these requirements. Whether you require a dome pack or a flat pack offering various combinations of flat and opaque sides for single or multiple items, your packaging costs will drop to a new low with a Sundstrand-Packmaster machine.

Change overs are fast and don't require skilled help because the Sundstrand-Packmaster design features fully interchangeable components that eliminate complicated adjustments.

Fig. 1 — Minimum floor space is required by Model 50 Packmaster which feeds out packages in a die cut ribbon for accordion folding or individual separation. Machines can be furnished with dial (shown) or pusher type feeder. Inset shows one of several types of optional printers available for imprinting specifications, part numbers, etc., on packages.

Fig. 2 — Long flat packages are readily handled on Model 56 Packmaster provided with loading table and belt exit conveyor. Changeover for various combinations of packaging materials is rapid. Automatic cut off feature makes possible running of various lengths of parts without any machine adjustment.

Fig. 3 — Dome packed parts can be packaged on this Model 58 Packmaster manually or using automatic loading as shown in inset. Thermo formed domes serve as parts conveyor as work moves along line. Domes can be shaped to fit closely over single parts or handle a number of smaller pieces.

Additional data is available on Sundstrand-Packmaster packaging machines. Write for further information today.

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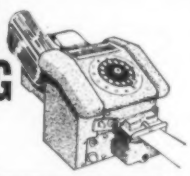

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Identifying the components of a packaging lamination

By Carl L. Brickman,
Manager, Product Testing Laboratory, Standard Packaging Corporation, Clifton, New Jersey

Six simple tests, which aid in identifying components in a lamination, are given in the first part of this article. Included are the diphenylamine spot test for nitrocellulose, the polyvinylidene chloride spot test, and ink removal. Tabular material includes various packaging material properties such as basis weight, specific gravity, flammability, odor, solubility, etc.

To complete this set of test methods, we must know how to separate component parts of a packaging lamination using toluene, and remove extruded polyethylene from primed films.

Test VII: Separation By Toluene

A glance at the film solubilities in Table II will show how many are unaffected by toluene. Thus, this solvent is usually used in the first step of obtaining separation of component films.

Procedure and discussion. The sample is first marked with a ball point pen as to side "out" since it may later be very helpful to know the position of separated materials so as to know which side may require special treatment. (A ballpoint pen is used to avoid tearing the sample.)

The sample is folded in half, film side out. The two ends are held together near the edges by paper clips which prevent curling in the solvent. Placed in a flat evaporating dish, the sample is completely covered with toluene. A watch glass is placed over the dish, and the time of immersion is noted.

A polyethylene or vinyl lamination will usually develop delamination wrinkles within 2 to 10 min. depending on adhesive character-

Part I of this article, which appeared last month, includes such tests as the diphenylamine spot test for nitrocellulose, a flotation method for determining polymer densities, and a method for separating materials bonded with a casein-latex type of adhesive. In this, the concluding part, Mr. Brickman gives two more important tests—separation by toluene, and a saponification method for separating extruded polyethylene from primed films. As a further aid, and to show practical applications of these methods, he presents actual analyses of tiny samples of laminations, which warrant careful study.

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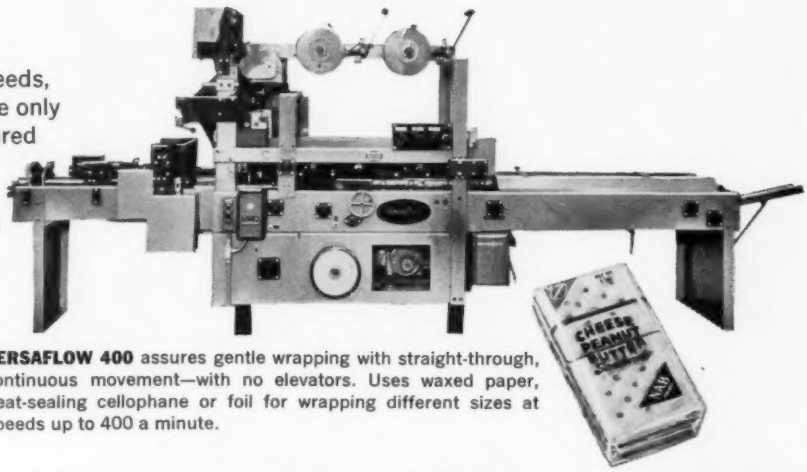

VERSAFLOW 400 assures gentle wrapping with straight-through, continuous movement—with no elevators. Uses waxed paper, heat-sealing cellophane or foil for wrapping different sizes at speeds up to 400 a minute.

MODEL FA is the most versatile of all Package models. Adjusts quickly to handle a wide size range. Speeds up to 120 packages a minute; handles full range of wrapping material including polyethylene. Wraps cartons, open trays or quarter pounds.

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VERSAFLOW 150 provides continuous, uninterrupted flow from infeed to discharge, assures gentle handling at speeds up to 150 a minute. The Versaflow 150 wraps in a variety of heat-sealable materials; handles a wide range of sizes.

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istics. In the case of **Pliofilm,** puckering will likely develop within ½ to 1 min.

When wrinkles show, remove the sample from the dish and, by peeling, try to separate the components. At the same time, note ease of separation and adhesive characteristics, and whether it still requires repeated dips in the solvent to effect complete separation.

The separated portions are then quickly returned to the dish and swabbed, using a glass stirring rod to hold the sample. After a final rinse with toluene, place the sample between paper towels to remove the excess solvent. It is then flash-dried and conditioned in the desiccator before weighing.

An extrusion coating on foil may sometimes be of weak bond. Although delamination wrinkles may not appear after immersion for 10 min., flexing at one of the corners may show that the film is loose enough so that it can be peeled from the foil.

If no separtion of a polyethylene film is obtained in toluene at room temperature, the dish without sample, but with watch-glass cover, is set on several pieces of asbestos on a hotplate. When condensation forms on the under side of the watch glass, the dish is removed from the heat. The sample is inserted into the warm toluene, and the dish is again covered.

After 2 min., remove the sample with tweezers and quickly examine it for signs of blistering or softening. If this occurs, as much toluene as possible is squeezed off by hand. Heating is repeated, followed by using the swab stick to remove all traces of polyethylene. Removal is judged complete in the case of a foil base when, upon drywiping with a cotton tuft, the foil appears clean; in the case of polyester or cellophane base, the film should be clear.

The manner in which extrusion-coated polyethylene dissolves in the hot toluene may also be used as an indication of density. If, after several minutes of swabbing, the film does not materially soften, or is softened only to the extent that a small spot, under rubbing, can be loosened and partially peeled by hand, it is characteristic of medium- or high-density material. In this case, the dish is left on the hotplate for more continuous heating, and swabbing of the sample is continued until all resin is removed. Fresh solvent is used as required, with xylene added if necessary; or the solvent is changed entirely to xylene for higher boiling point to facilitate removal.

In the case of a **polyethylene hot-melt lamination,** for example, cellophane / polyethylene / cellophane, the sample is kept in the hot toluene until signs of slight separation occur at one of the edges; or, enough separation so that, with a pair of tweezers in each hand, the two cellophanes can be gradually pulled apart while constantly immersed. Usual immersion time required is about 20 min. Once separated, the remaining resin on each film can be swabbed off.

If a **cellulose acetate/foil lamination** is encountered in which the separation is not readily effected with toluene at room temperature, it can be done more quickly by handling in the same manner as the above polyethylene hot-melt lamination.

If the lamination is a **cellulose acetate/foil/heat-seal coating,** the coating is usually of a vinyl type. Before the cellulose acetate/foil is separated, the coating must be removed. This is accomplished by handling in the same manner as described for ink removal (Test VI), but with MEK as the solvent.

Test VIII: Polyesters And Cellophanes Primed For Extrusion-Coating With Polyethylene

Primers increase the strength of the bond—some to a greater degree than others. Titanium ester primers, properly formulated and applied, quite often give adhesion to such a degree that separation of extruded polyethylene from the substrate is not obtained by soaking in toluene. Even in hot toluene it may require repeated swabbings

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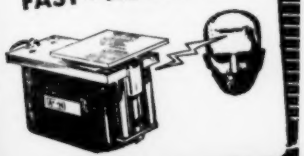

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with firm pressure before the last trace of film is removed. This is particularly so if the polyethylene is high in density.

Clean separation of substrate and polyethylene, however, can be made by a saponification method. Use is made of the fact that polyethylene has a high permeability to ammonium hydroxide which is the reagent for this test.

Procedure and discussion. The weighed sample is marked as to side "out" with a ball-point pen (ball point to avoid tearing). It is folded in half, and the two ends are held together with paper clips. It is then placed in a small evaporating dish to which is added sufficient *concentrated* ammonium hydroxide to keep the sample immersed. The dish is covered with a watch glass and the time of immersion is noted.

Examine the sample at 15- to 20-min. intervals up to 1 hr. This is done by blotting the sample with a paper towel, then holding it between the thumb and first two fingers, and exerting a sliding pressure. If no separation occurs on the first trial, return the sample to the dish for the next time interval. Most separations occur in the first or second trial. Polyester films usually give a noticeable cracking or snapping sound at the instant of separation; cellophane and the K-type cellophanes appear softer and more limp.

The separated films are rinsed with water, blotted, flash-dried, conditioned in the desiccator, and weighed. The polyethylene film, after drying, should lie with little or no curl. However, if considerable-to-bad curling does occur, a hot-melt lamination is suspected.

Analyses

To show how these various tests may be applied, ten actual analyses of tiny samples of laminations are shown. Note that the results are semi-quantitative. While the analytical routine can be followed easily, it requires a certain amount of good judgment to interpret the findings. These examples show how the data are interpreted, and deserve careful study, especially by anyone working with laminations or laminating.

Abbreviations used in these case histories are:

ca. - circa
CA - cellulose acetate
cello - cellophane
def. - definite
HS - heat seal
lam. - laminated
MEK - methylethylketone
ptd. - printed
poly - polyethylene
polyex - polyethylene extrusion coating
sepn. - separation
sl. - slight
spl. - special
Ti - titanium
unptd. - unprinted
v. sl. - very slight

The analyses begin on Page 55.

Literature Cited

(1) Player, J. H., "Identification of polyvinylidene chloride and its copolymers," *The Analyst*, **80** (1955), No. 953 (Aug.), p. 633.

(2) Roberts, A. G., "Diphenylamine test for nitrates in mixtures of cellulose esters," *Analytical Chemistry*, **21** (1949), No. 7 (July), p. 813.

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ANALYSIS I

End use: Coffee. Material appearance: foil/poly.
Sample: 1 (2x2¼ in.). Weight 0.3080 gm. B.W. 65.1995 lb.

	Weight (gm.)	B.W. (lb.)
Test I: Stretch indicated poly extrusion-coated (polyex).		
Test VI: Foil side, ink off (ethanol/MEK)....(a)	0.2926	61.9396
[65.1995 — 61.9396] Ink		3.2599
Test VII: (a) toluene 5 min.: no sepn.; hot toluene 4 min.: film softened, removed by swabbing, leaving.....(b)	0.2557	54.1283
[61.9396 — 54.1283] Polyex		7.8113
Test VII: (b) returned to hot toluene 15 min.; (c) foil inside septd. from (d) remaining foil/paper .....(c)	0.0693	14.6699
(d)	0.1700	35.9867
[(c) + (d)]		50.6566
[54.1283 — 50.6566] Adhesive		3.4717
Test V: (d) soaked overnight: sepn. (e) foil, and (f) paper .....(e)	0.0700	14.8180
(f)	0.0946	20.0255
[(e) + (f)]		34.8435
[35.9867 — 34.8435] Adhesive		1.1432

Reported:

	B.W. (lb.)*
Ink (on shiny side of foil).....	3.26
Al. foil (35 ga.).....	14.82
Adhesive (casein type)	1.14
Paper	20.03
Adhesive	3.47
Al. foil (35 ga.)	14.67
Polyex (0.00054 in.)	7.81
Total	65.20

*73°F., 50% R.H.

ANALYSIS II

End use: Dairy product. Material appearance: paper/foil/film.
Sample: 1 (2x4 in.). Weight 0.8871 gm. B.W.* 105.6300 lb.

	B.W. (lb.)
Test I: Stretch indicated film laminated.	
Test VII: Toluene 1 min.: delamination wrinkles on film with sepn.; (a) Pliofilm, and (b) paper/foil..(a)	24.4101
(b)	76.9217
[(a) + (b)]	101.3318
[105.6300 — 101.3318] Adhesive	4.2982
Test VII: (b) returned to hot toluene 15 min.: polyex laminant removed leaving (c) foil, and (d) paper .....(c)	29.7565
(d)	30.7329
[(c) + (d)]	60.4894
[76.9217 — 60.4894] Polyex	16.4323
[@50% R.H.] (d)	31.7332

Reported:

	B.W. (lb.)	
Paper, pouch	30.73*	31.73†
Polyex (0.00115 in.)	16.43*	
Al. foil (70 ga.)	29.76*	
Adhesive	4.30*	
Pliofilm, 140 MW (on dull side of foil)...	24.41*	
Total	105.63*	106.63†

*75°F., 15% R.H.
†75°F., 50% R.H.

ANALYSIS III

End use: Not given. Material appearance: foil/film
Sample: 1 (2x4 in.) Weight 0.5319 gm. B.W. 63.3354 lb.

	B.W. (lb.)
Test I: Sealable at 300-325°F., ½ sec., 30 lb/sq. in. MEK 4 min.: sl. to def. tacky; toluene 6 min.: noticeable sl. tackiness; dried with paper towel: sl. pick-off of paper; ethanol 10 min.: no effect.	
Test VII: Hot toluene 5 min.: film (a) off under firm pressure as rolled up small pieces leaving only (b) foil .....(b)	43.0333
[63.3354 — 43.0333] (a)	20.3021
Test IV: (a) positive for polyester.	

Reported:

	B.W. (lb.)*
Al. foil (0.001 in.)	43.04
Videne A (0.001 in.)†	20.30
Total	63.34

*73°F., 40% R.H.
†Combined with heat and pressure.

ANALYSIS IV

End use: Luncheon meats. Material appearance: transparent; glossy outside, like poly inside.
Sample: 1 (2x4 in). Weight 0.5192 gm. B.W. 61.8231 lb.

	B.W. (lb.)
Test I: Poly lamination.	
Test II: Negative.	
Test IIIa: Positive outside (saran).	
Test VII: In toluene 3 min.: sepn. as (a) K-film, and (b) poly .....(a)	25.5532
(b)	33.2769
[(a) + (b)]	58.8301
[61.8231 — 58.8301] Adhesive	2.9930
Test IIIa: (a) after weighing: inside positive.	
Test IIIb: Positive for K-203.	

Reported:

	B.W. (lb.)*
300 K-203 cello	25.55
Adhesive	2.99
Polyethylene (0.0023 in.)	33.28
Total	61.82

*73°F., 45% R.H.

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ANALYSIS V

End use: Chemicals. Material appearance: like an acetate/foil/tinted heat-seal coating.
Sample: 1 (2x4 in.). Weight 0.6878 gm. B.W. 81.8990 lb.

	B.W. (lb.)
Test II: Positive for outside, hence cello and not acetate.	
Test VII: MEK swab of HS side: coating off leaving film/foil ..... (a)	79.3151
[81.8990 — 79.3151] HS	2.5839
Test VII: (a) in toluene 4 min.: sepn of cello (b), and foil (c); little or no tackiness in the adhesive.. (c)	48.1296
(b)	21.3023
[(c) + (b)]	69.4319
[79.3151 — 69.4319] Adhesive	9.8832
Test II: (b) after weighing: inside positive.	
Test I: On separate piece, HS coat removed; under heat of heat sealer, the laminant melts and oozes, and when cool shows separation, hence, wax type.	

Reported:

	B.W. (lb.)*
300 cello (MSAD-86 type)	21.30
Adhesive (wax type)	9.88
Al. foil (100 ga.)	48.13
HS coat (vinyl)	2.58
Total	81.89

*78°F., 60% R.H.

ANALYSIS VI

End use: Luncheon meat. Material appearance: transparent, ptd. glossy film/poly.
Sample A: 1 (2x4 in.), unptd. area. Weight 0.3602 gm. B.W. 42.8904 lb.
Sample B: 1 (2x4 in.), unptd. area. Weight 0.3679 gm. B.W. 43.8073 lb.

	B.W. (lb.)
Test I: Extrusion-coated.	
Test II: Negative.	
Test IIIa: Negative.	
(A) Test VII: Toluene 6 min.: no sepn., but bad curl to film side. Hot toluene 2 min.: delamination wrinkles with sepn., no adhesive; (a) polyester film, and (b) polyex ..... (a)	10.5856
[42.8904 — 10.5856] (b)	32.3048
Test IIIa: (a) inside: negative. (b) side adjacent to (a): positive, indicating weak adhesion of saran to (a), coating transferred to (b). After MEK/acetone..... (b)	28.6372
[32.3048 — 28.6372] Saran coat	3.6676
(B) Test VIII: Clean sepn. 15 min. (a) polyester, and (b) polyex ..... (b)	30.0066
(a)	13.8483
Test IIIa: (a) after MEK/acetone	10.5261
[13.8483 — 10.5261] Saran coat	3.3222

Reported:

	B.W.* (lb.)		
	Sample A	Sample B	
Polyester (0.0005 in.)	10.58	10.53	10.53
Saran	3.67	3.32	3.32
Primer (Ti ester)	?	?	?
Polyex (0.002 in.)	28.64	30.00	29.96†
Total	42.89	43.85	43.81

*73°F., 35% R.H.
†By difference [43.8073 — 13.8483].

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ANALYSIS VII

End use: Pharmaceutical unit strip-package. Material appearance: ptd. glossy film/foil/HS.
Sample: 1 (1x3¼ in.). Weight 0.2075 gm. B.W. 60.8192 lb.

	B.W. (lb.)
Test I: HS is a coating.	
Test II: Negative.	
Test IIIa: Negative.	
Test VII: HS coat (a) off with MEK cotton swab leaving (b) film/foil .....(b)	57.9175
[60.8192 — 57.9175] (a)	2.9017
Test VII: (b) in toluene 20 min.: only v. sl. sepn. In warm/hot toluene 15 min.: sepn. of (c) film and (d) foil; all ink of reverse printing removed along with the adhesive.....(c)	19.9897
(d)	28.5777
[(c) + (d)]	48.5674
[57.9175 — 48.5674] Adhesive	9.3501
Test I: (c) MEK softens the film.	

Reported:

	B.W. (lb.)*
Cellulose acetate (100 ga.)	19.99
Ink & adhesive	9.35
Al. foil (0.000676 in.)	28.58
HS (vinyl)	2.90
Total	60.82

*73°F., 30% R.H

ANALYSIS VIII

End use: Dessert mix overwrap. Material appearance: ptd. al. foil/paper.
Sample: 1 (2x4 in.) Weight 0.5423 gm. B.W.* 64.5737 lb.

	B.W. (lb.)
Test I: Construction appears to be foil/paper/wax/tissue.	
Test VI: Ink off with ethanol/MEK.....	62.0851
[64.5737 — 62.0851] Ink	2.4886
Test VII: In warm toluene 5 min.: sepn. of (a) tissue inside leaving (b) foil/paper.....(a)	8.5259
(b)	28.9587
[(a) + (b)]	37.4846
[62.0851 — 37.4846] Wax	24.6005
(b) also appearance of wax-lam., and that some wax was removed on the above toluene separation.	
Test VII: (b) in hot toluene 5 min.: sepn. of (c) foil, and (d) paper (also tissue).....(c)	12.9909
(d)	15.4557
[(c) + (d)]	28.4466
[28.9587 — 28.4466] Wax (partial)	0.5121
(a) and (d) conditioned at 50% R.H.....(a)	8.6685
(d)	15.6580

Reported:

	B.W. (lb.)	
Ink	2.49*	
Al. foil (30 ga.)	12.99*	
Microcrystalline-type wax (partial)	0.51*	
Tissue	15.46*	15.66†
Microcrystalline-type wax	24.60*	
Tissue	8.52*	8.67†
Total	64.57*	

*72°F., 40% R.H.
†72°F., 50% R.H.

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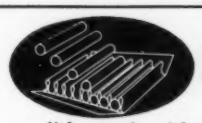

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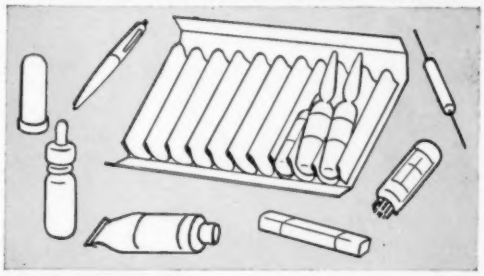

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(*Continued from Page 57*)

ANALYSIS IX

End use: Outdoor advertising — Material appearance: glossy film or coating colored gold/fabric backing.
Sample: 1 (2x4 in.). — Weight 2.9975 gm. B.W. 356.924 lb.

	B.W. (lb.)
Test I: Surface unaffected by toluene, MEK, or ethanol.	
Test VII: Warm/hot toluene 10 min.: sepn., tacky adhesive, (a) film with gold first color, aluminum back, and (b) white rubber-coated fabric ..... (b)	296.0170
[356.924 — 296.0170] (a) with adhesive	60.9070
(a)	12.5623
[60.9070 — 12.5623] Adhesive	48.3447
Test VI: (a) ink on inside removed, leaving (c) clear film ..... (c)	11.1334
[(a) — (c)] Ink	1.4289
Test IV: (c) positive for polyester.	
Test spl.: (b) in warm aniline 1 hr.: rubber (d) peelable from fabric (e); ethanol rinse..... (e)	100.0690
[296.0170 — 100.0690] (d)	195.9480

Reported:

	B.W. (lb.)*
Polyester (0.00051 in.)	11.13
Ink (gold & aluminum)	1.43
Adhesive	48.34
Cured white rubber	195.95
Bl. fabric	100.07†
Total	356.92

*72°F., 50% R.H.
†4.8 oz/sq. yd., count: 72x60 (72x59 before sepn.).

ANALYSIS X

End use: Tablet unit strip-packaged. — Material appearance: transparent; glossy outside, like a poly inside.
Sample: 1 (1.0x⅝ in.). — Weight 0.471 gm. B.W. 71.7872 lb.

	B.W. (lb.)
Test I: Insufficient size to perform. Only a few small pieces ca. 3/16 in. wide left after cutting sample.	
Test IIIa: Negative (using the small pieces).	
Test II: Positive.	
Test VII: Toluene 10 min.: sepn. without wrinkling as (a) transparent film inside, and (b) clear film but with definite curl (indicating not a single film). ..... (a)	22.4050
(b)	44.6575
[(a) + (b)]	67.0625
[71.7872 — 67.0625] Adhesive	4.7247
Test VII: (b) returned to toluene 5 min.: no effect; hot toluene 5 min.: coating inside softened like poly with clear film (c) left after swabbing in fresh hot solvent..... (c)	21.7953
[44.6575 — 21.7953] Polyex	22.8622
Test II: (c) after weighing: inside negative.	
Test VI: (a) negative as polyethylene; negative as vinyl; positive as saran.	

Reported:

	B.W. (lb.)*
300 cello (MSAD-80 type)	21.80
Polyex (0.0015 in.)	22.86
Adhesive	4.72
Saran film (75 ga.)	22.40
Total	71.78

*73°F., 50% R.H.

(*End*)

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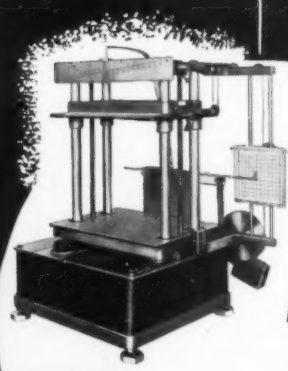

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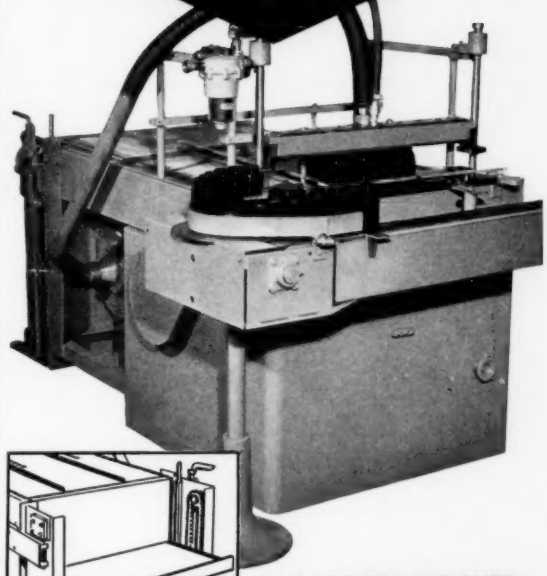

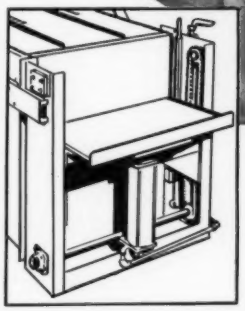

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Manual packaging still important, merits improvement

By Emil Kanzer,
Industrial Engineer,
James P. Marsh Corporation,
Skokie, Illinois

Not withstanding the advance of automation, the art of manual packaging still plays a definite role for some items. Products currently requiring a manual packaging operation are gauges, thermometers, and like items. Mr. Kanzer tells how his company has improved its manual packaging by going to a one-piece, self-locking, corrugated box, with revised techniques of using it. Not only has this cut the packaging time in half, but it has also resulted in an advantage to its customers by reducing the time on their assembly lines to open the packages.

A manual packaging operation can be improved by many ways other than going to automation. There are always short-cuts and more efficient methods. It takes ingenuity and persistence, but it can be done. **Until such time that automatic packaging equipment will handle such products as gauges, thermometers, needle valves, regulating valves and similar types of odd-shaped items, a manual operation remains necessary.**

For many years we have investigated the possibility of using various types of conveyors for moving our products to the centralized packaging area and gain some semblance of a mass packaging operation. To date, none of the plans devised has been practical because of the complexity of our situation. However, we have been able to increase the efficiency of our manual packaging and cut our packaging time in half, by going to a one-piece corrugated box and eliminating all taping of this box.

Numerous Product Combinations

We manufacture over 100,000 combinations of products (see Fig. 1). The different gauges, for instance, are made up of combinations of size and color of the dial, size and color of the case, range of pressure and vacuum, units of measure of pressure and vacuum, size and positioning of the socket, and other variations. In addition to these, special orders can involve special color combinations, customer's name on the dial, dual-purpose gauges (for pressure and vacuum, and for temperature and pressure), special fittings, etc. Then we have similar possibilities for dial-type thermometers, needle valves, and regulating valves.

Our gauges range in size from **1-½ in. to 12 in. in diameter** (this is the size of the dial—not the case—as it determines the nominal size of the gauge). Location of the socket can be either on the back or side. On the back, it can protrude from the center or near the outer periphery; on the side, at any point around the case.

The many dial-type thermometers range from 2 to 6 in. in diameter, some with short bulbs, others with thermocouple lines varying in length from 2 to 100 ft. The needle and regulating valves are made in many combinations of sizes and styles—the largest ones with 1-in. pipe connections.

Orders vary. Special orders as received daily may vary from one product of a special type to thousands of the same type. In addition to special orders, we have our standard stock items to produce. Even with these, conveying is not practical since the "specials" and "standards" are interspersed during production and packaging.

Many Products Fit Same Box

These thousands of product combinations boil down to about 35 shapes and sizes which determine the dimensions of the boxes to be used for packaging. Thus, many combinations will fit the same box as long as the outside size and shape of each combination remain the same.

For example, a single-sized gauge case can contain any one of thousands of combinations, which make each gauge different. Even positioning of a **side-mounted** socket with respect to the dial face makes it different. Each of these, however, can be packaged in the same size box since the outside size and shape of the gauge are identical. Change the socket from side- to back-mounting and a different box is needed.

But the important thing is that

Emil Kanzer received his industrial engineering degree from Industrial Engineering College, Chicago. He specialized in time study and methods. With Marsh 23 years, he has been in packaging for the past 16, during which time his interest has increased greatly. He became head of methods and time study department in 1943.

the specifications of the product packaged within match those on the label outside. Therefore, it is absolutely necessary that each order be kept entirely separate during manufacture, inspection, packaging, etc.

Process Orders Immediately

Regardless of the sizes of the orders, each is processed immediately rather than being held for grouping which would permit some form of automation. This procedure results in prompt deliveries to our customers. **Because of these facts, one can readily see that automatic conveying, packaging, etc., are out of the question.**

As the instruments for one order are manufactured, they are placed in a tote tray along with the proper labels and a copy of the order. We make extensive use of these trays. This keeps an entire order together up to the time the items are packaged and shipped. If the order is large enough, more trays are used. After being thoroughly tested for quality, the items are ready for packaging.

Labels Imprinted

For large quantity stock items, the gummed labels are printed completely with our company name and all product specifications; that is, model number, range, size, color, etc. For small quantity stock items, the labels are printed with our company name only. Blank spaces are left for the product specifications which we imprint as needed.

The reason for this latter type label is the vast number of different combinations possible and the small quantity in which each is produced. To have these printed completely would be uneconomical due to the small quantity purchases which would be involved.

For some special orders, we imprint the product specifications on the labels mentioned lastly above. With other "specials," including those on which the customer's name is on the dial, we print a plain label with product specifications only.

Labels accompany order. The necessary number of properly imprinted labels are made up according to the order when received. They are fastened to, and accompany, the order from this point on until applied to the boxes at the packaging stations. **Distribution of the necessary labels is the responsibility of one girl only. She alone maintains the labels in stock, imprints them as required, and atta-**

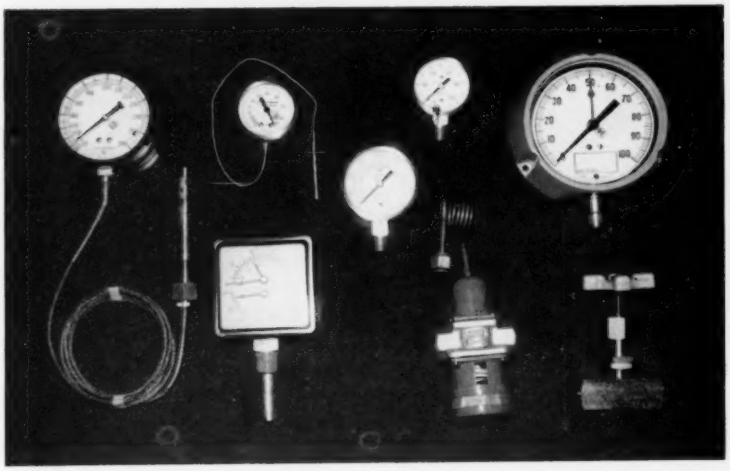


Fig. 1. Small segment of over 100,000 combinations of products. These boil down to about 35 different shapes and sizes which determine dimensions of boxes used for packaging. Many combinations fit same box as long as outside size and shape of each combination remain the same.

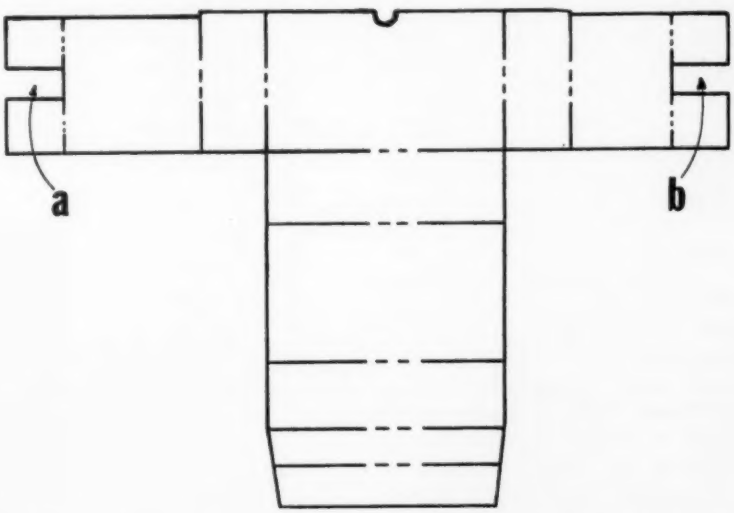


Fig. 2. One-piece, die-cut blank for dual-purpose gauge — temperature and pressure — the thermometer bulb of which protrudes from gauge socket. (See square gauge, left foreground, Fig. 1.) Note slots a and b which fit over socket and prevent gauge from shifting in package, thus no damage. Box is packed easily and quickly. (See Figs. 3 through 8.)

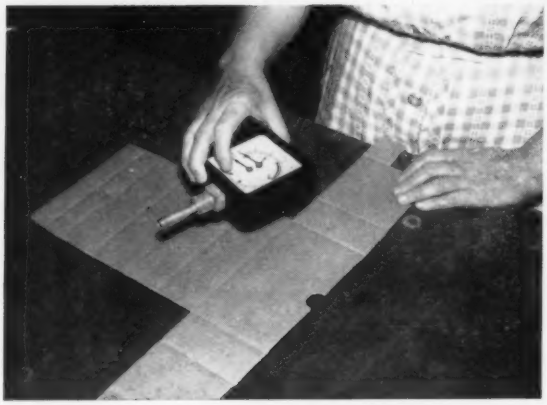


Fig. 3. Holding blank with left hand, girl picks up gauge with right and places it on large panel of T-shaped blank.

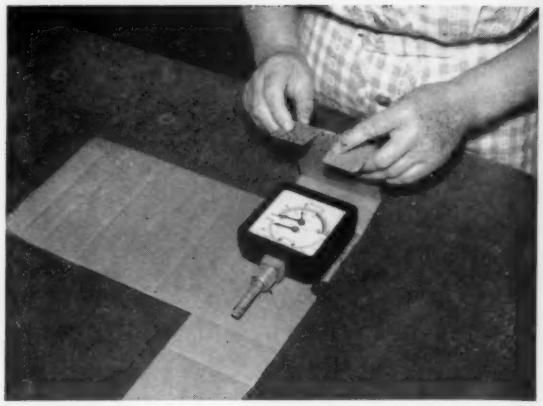


Fig. 4. Starts packing gauge by folding first side flap up and over the gauge.

ches the proper ones to the orders when she receives them.

Simplified Packaging Operation

Our packaging operation is quite simple. Each of our six packaging workers performs her duties at a large work table. The tote trays containing the products and labels for one order are delivered to one girl. Likewise, the necessary boxes are delivered. **For efficiency and convenience, we maintain a "ready" supply of all the different sized boxes in bins a few feet from the packaging area.** The quantity of each size held in these ready bins depends on the usage which is determined as the orders are processed.

From the tote trays, each instrument is packaged in its individual box. We produce a few bulk packs, but only in an extremely limited quantity as most customers want the various items packaged individually.

Previously used inner packaging. Over the years, we have used several styles of boxes. Some of these were full telescope type, and sleeve and insert combinations. In many instances, inner packing components were required. These included tissue and cushioning materials. There were a number of disadvantages to these styles. We had many more packaging components—at least two pieces for each box, and quite often more than two including the inner packing. Frequently, the components didn't "even" out—we would end up with extra tops or bottoms!

To keep the boxes closed after packaging, some had to be taped, which was an additional operation for our packaging people; thus, low package output. Also, taping resulted in our customers' having to take more time on their production lines to cut the tape and open the packages. This was a definite disadvantage to them.

Stress Convenient Use-Out

We considered this latter disadvantage a very serious one. It still is, in fact, in many industries. In looking for a way to improve our packaging, we endeavored to eliminate, or at least better, this situation for our customers, particularly those who must open the packages on a high-speed assembly line where precision timing is of prime importance.

We would like to stress this point: More manufacturers should consider package use-out, especially for products which are to be used as sub-assemblies on another packaging line. It is astounding that so much time is required to unpack such items. It is wasted time, too. True, some items, especially very fragile ones, must be packaged differently, but wherever practical, and depending upon the product, **the opening feature should be as simple and as quick-opening as possible.**

Use One-Piece Box

Currently we use one-piece, die-cut, self-locking, corrugated boxes. Thus, **there is only one component part for a complete package.**

Fig. 7. Tucking short remaining portion of center flap into body of box secures the package.

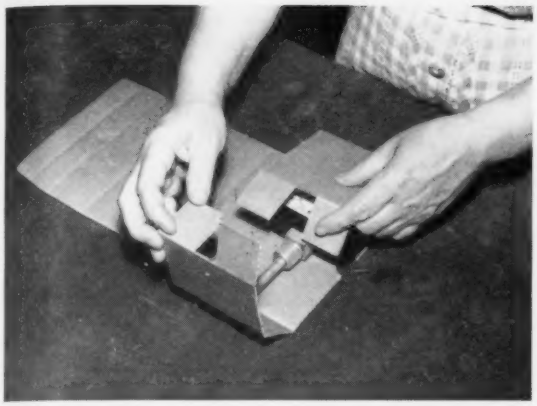


Fig. 5. Folds second side flap over gauge, tucking slots in end of flaps over gauge socket.

Fig. 6. She literally "rolls" body of package into long, center flap which breaks along its transverse scores.

Where inner packing is required for added protection to special features on a product (a thermometer bulb for instance), it is included as an extra flap, or flaps, which are a part of the box, and are folded in a given manner.

Fig. 2 shows the blank of one such box. This particular blank is used for a dual-purpose gauge—temperature and pressure—the thermometer bulb of which protrudes from the socket. Note the slots "a" and "b" which fit over the gauge socket thus preventing any movement of the gauge in the closed box during normal shipping and handling.

Reduces packaging time. In use, this box is packed easily and quickly. (See Figs. 3 through 8.) The girl picks up a blank with her left hand and the gauge with her right. Laying the gauge in place on the T-shaped blank, she folds the side flaps up and over the gauge, tucking the slots "a" and "b" over the socket.

She then literally "rolls" the body of the package into the long, center flap which breaks along its transverse scores during this operation. Tucking the short remaining portion of the center flap secures the package. Pressing the label in place completes the finished package ready for shipment. **Total time to package one gauge completely: 6 sec.**

Advantages

This one-piece style box has resulted in many advantages over the styles previously used. Already mentioned, **each package is made up of one component part.** There are no leftover pieces to worry about. **We have reduced our storage requirements 50 per cent** due to the more compact form.

Further, **we have standardized box sizes** so that more combinations will fit in the same size box. Normally, the one-piece box would cost more than some of the styles previously used, due to greater board usage. However, through box size standardization, larger quantity purchases are made which offset an increase. **There are no variations in box sizes,** which result in less damaged goods, less returned items, and reduced repair cost, all of which make for better customer relations.

By eliminating additional inner packing, we have effected a material savings. With no taping required, we have eliminated the cost of the tape and one packaging operation. With only the one component to handle and no taping operation, our packaging personnel have increased their efficiency and about doubled their output. Six girls can now package and label as many as 20,000 packages per 8-hour day.

An important advantage to our customers is the valuable time they save on their production lines with the more-easily opened box. We feel we have contributed materially to improving this situation for users of our products by going to the one-piece box we now have. We recommend that more manufacturers of sub-assembly parts do likewise. *(End)*

Fig. 8. Pressing label in place completes finished package for shipment. Total time to package one gauge completely: 6 sec.

Announcements of machinery and products

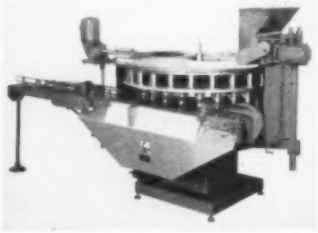
1. Beneath each announcement is a code number. As you select items on which you want more information *note* this number.
2. Now, *circle* the corresponding numbers on the postcard, located inside back cover.
3. Next, *fill* in your name and address.
4. Then, *mail* the card — we pay the postage.

Polyethylene Pouches

Western - Waxide Div., Crown Zellerbach Corp., announces availability of frozen food polyethylene pouch packages called Crown Poly pak. The pouches, which are of 2-mil thickness for most products and 3-mil for sharp items, are formed, filled and sealed in one completely automatic operation. Non-toxic inks, available in six colors, are used to prevent any contamination of product. Circle No. 1.

Can Filler

FMC's Canning Machinery Div. announces its Model ST Flexi-Filler. Designed for semi-automatic operation, the addition of an automatic hopper and adjustable brush on the filling top makes it fully automatic. Interchangeable filler tops allow the filler to handle cans ranging from 211 to 603 in diam. Telescopic filling pockets can be vertically adjusted within given ranges to control volume for various can sizes. The machine is available as a 12, 18 or 24 pocket filler. The



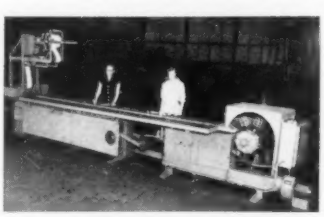
24 pocket filler reaches speeds up to 300 cans/min. for 303x406 cans. Other features are individual pocket cut-off plates and "No-can No-fill" device that prevents product loss. Circle No. 2.

Food Packaging Film

The Goodyear Tire & Rubber Co. announces the availability of extruded, plasticized polyvinyl chloride film approved for food packaging by FDA. Called Vitafilm F, it can be used in straight or over-wrap applications and laminates to paper, film or foil. Possessing wrinkle-free transparency, it is resistant to sunlight, tough, durable, dimensionally stable with extreme flexibility which makes it heat sealable, Goodyear says. This 1-mil film has a yield of 21,500 sq. in./lb. Circle No. 3.

Thermoforming Machine

Sundstrand - American Broach, Div. of Sundstrand Machine Tool Co., announces the Sundstrand-



Packmaster Model 58 which thermoforms blister, bubble and dome-pack packages. To form the package, the film comes from a roll, is drawn through a series of heat lamps before passing between the roll and drum located at the entry end of the machine. It is heated to approximately 300°F, clamped and drawn to shape by vacuum being applied. Then clamps are opened, the strip is released, and parts are placed into each formed bubble. Clear or opaque thermoplastic sheets or kraft-type heat-seal paper may be used to seal the package. The sealing paper meets the formed heat-sealing rolls. Packages coming off the line can be cut off individually or run in a continuous ribbon. The flange base produced during the forming operation is used to support the package and parts as both ride on guide rails of the loading table during the packaging operation. Packages 4x4 in. are produced at 60/min. with production of smaller packages being correspondingly higher. Circle No. 4.

Compression Tester

L. A. B. Corp. announces a new compression testing machine designed for testing shipping containers, packages and packaging material. It meets ASTM specifications for compression testing of containers, L. A. B. says. The machine consists of a fixed platform on which packages are placed, an upper platen connected to a crossbeam which is raised and lowered by two loading screws housed in vertical channels and a direct-reading dynamometer. The base plate will accept packages up to 40 in. square and stands 12½ in. from the floor for easy handling of containers. Machines can be furnished with box height openings of 48, 60 or 72 in. Dynamometers are available from 2,000 to 10,000 lb. maximum readings. Circle No. 5.

Seal For Heavy-Duty Poly Bags

Chippewa Plastics, Inc. announces a flush, weld-type seal for its new heavy-duty, polyethylene bag. With the "Chipp-a-Weld" sealing technique, seals are stronger, provide more usable bag area and eliminate the lips of conventional skirt-type seals, Chippewa says. Bag types available with the "Chipp-a-Weld" seal are open-mouth with the bottom sealed or with top and bottom sealed

and miter-cut for valve-type fillers. After filling, they can be closed with regular sealing equipment. Circle No. 6.

Polyethylene Blend Coating

Allied Chemical's Semet-Solvay Petrochemical Div. announces a grease resistant coating which is a 100% polyethylene blend. An all-surface coating of about one mil (13.7 lb. of resin/3,000 sq. ft.) was found to be the most satisfactory, according to Semet-Solvay. The coating can be ap-

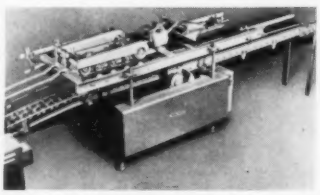
plied with conventional reverse roll coater. Coatings of the new blends have wide application in packaging of bakery goods, fresh and prepared meats or wherever grease is a problem, Semet-Solvay says. Gloss can be controlled by the method of application. Circle No. 7.

Aerosol Metering Valve

The Risdon Manufacturing Co. announces a "universal" large-capacity aerosol metering valve, usable with types of propellants now available. Called the Magna-Meter valve, it can dispense foam, spray or liquid products in measured quantities of 150 mg. (0.150 cc.) up to 2,500 mg. (2.5 cc.). The new metering valve was made possible by adding an auxiliary chamber of aerosol-resistant synthetic rubber to the company's standard metering valve. It can be used with different types of actuators and with glass or metal containers. Also, it can be used to spray water-based aerosols. Circle No. 8.

Automatic Case Opener

Atkron, Inc. announces its Model CFO-1 "Atkron Dumore," automatic fourflap case opener. Cases are centered by guide rods and fed past two pressure rolls which raise side flaps to permit flap-plow to enter and return flaps to



horizontal. As case advances, the leading edge is engaged and pulled open by hook. Case next is advanced by a V-belt drive, which engages side flaps. Case then trips a switch automatically reversing the V-belt drive, bringing case back under the pivoted arm of front flap opening hook. This action engages front flap and opens it. Reverse travel trips second switch, which sends case to discharge conveyor. The machine handles sizes to 14 in. wide, 21 in. long, and 12½ in. deep. Maximum speed is in excess of 30 cases/min. Unit takes a 12 x 3 ft. floor space and fits standard conveyors. Circle No. 9.

Plastic-Coated Glass Packages

Owens-Illinois Glass Co. announces a new technique for the manufacture of plastic-coated glass pressure packages. The process produces a package in which glass

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Cost of 5" x 8" x 10" chipboard carton printed in one color and purchased in 500 M quantity $0.035
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Labeling Lines

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1. FOIL LABELS AND THEIR APPLICATION
2. FACTORS INFLUENCING SUCCESSFUL LABELING
3. LABELING ADHESIVES
4. DETERMINING THE SIZE AND SHAPE OF WRAP-AROUND NECK LABELS
5. PLANT LAYOUT AND BETTER BOTTLING
6. LABELING STANDARDS

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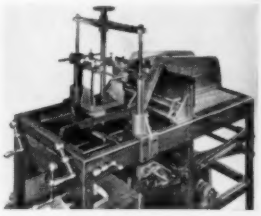
and plastic coating become as one. A group of stock designs in various capacities is available which can be produced within prescribed limits in a variety of shapes, sizes, and range of stock, and colors of plastic coating. Packages for liquified and compressed gases of the Freon and Nitrosol varieties can also be supplied. Circle No. 10.

Automatic Tray, Box Former

John T. Raisin Corp. announces a new method of forming a tray or box. Using heat, the machine



produces boxes or trays with tightly-sealed, leakproof corners and clean sidewalls. Interior is coated to accomplish the heat sealing of the corners. Coatings include polyethylene or vinyl for grease proofness, and aluminum foil for oven baking in the trays. An automatic machine is available to the user for forming the packages from pre-cut blanks. The machine delivers trays, or boxes on a moving belt to packaging line without needing an operator. Size of packages ranges from 3x3 x¾ in. to 12x12x4 in. Circle No. 11.

Conveyor Line Marker

Pryor Marking Products announces the "Rocket", a new, friction operated and self-inking conveyor line marker. Attached to conveyor line or case sealer, the automatic marker imprints changeable data such as codes, dating, trademarks on cartons, bags, rolls, cans, drums. The Rocket utilizes base-lock rubber type and its simplified design permits rapid disassembly. Printing height can easily be converted from 1 in. to 2 in. Unit can be used singularly

or in multiple to mark both top and sides or 2 sides, simultaneously. Circle No. 12.

Pressure-Sensitive Tape

The Connecticut Hard Rubber Co. announces a new thermal

TAPEnology rolls on 3,000 filter labels an hour... automatically!

A labelled filter cartridge in less than 1¼ seconds . . . up to 3,000 an hour! At Carter Carburetor Division of ACF Industries, Inc., that's the eye-blinking production clip for applying labels of printed "SCOTCH" Brand Polyester Film Tape No. 850 to their new in-the-line gasoline filter.

This custom-built machine (a modified S-603 "SCOTCH" Brand Pad Applicator) does the job . . . automatically tabbing and rolling the silver, red, and black tape-labels to the cartridges passing on the conveyor. The result: an attractive, eye-catching label that holds its message indefinitely; resists weathering, road film, engine heat.

What do you label? Chances are, "3M-MATIC" Taping and Dispensing methods can open up new possibilities for you to speed your production, save on costs, and get more attractive packages with tape. 3M Representatives will be glad to search out such possibilities for you. Ask your local "SCOTCH" Brand Tape Distributor for more information, or write: 3M Co., St. Paul 6, Minn., Dept. RZ-59.

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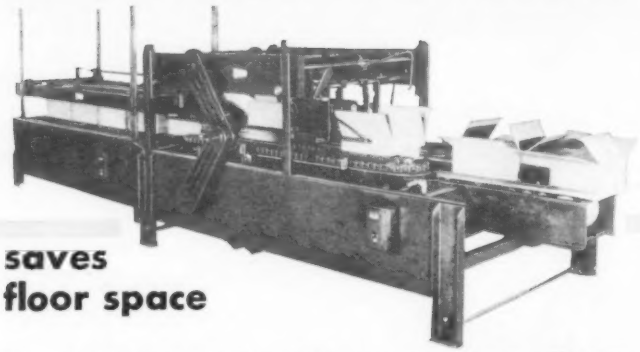
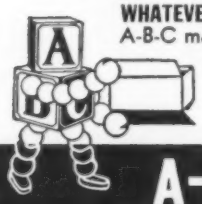
3M COMPANY

A-B-C Short Case Sealer



saves floor space

This A-B-C Short Case Sealer really increases packaging efficiency. Glues, folds and seals either or both top and bottom flaps in one operation—automatically. Speeds up to 30 cases a minute. Finest welded construction. Ball bearing construction reduces maintenance. Guaranteed not to get out of "time".



WHATEVER YOUR PACKAGING PROBLEM, there's a proved A-B-C machine to solve it—case sealers, unloaders and unscramblers, side sealers and hand gluers.

WRITE TODAY FOR DETAILS—
FLOOR PLANS & SPECS

A-B-C PACKAGING MACHINE CORP.
TARPON SPRINGS, FLORIDA

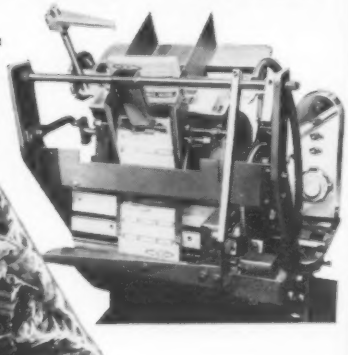
For more information circle No. 250 on Reader Service Card

ANOTHER PROFIT-PACKED FEATURE

MERCURY Label Sealer

now with

Automatic PRICE Imprinter...



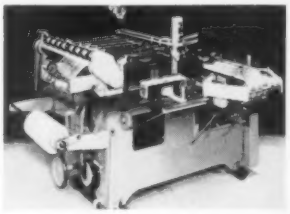
Efficient "all-in-one" operation of the VLS-12 Label Sealer achieves safe, foolproof operation at high speeds . . . folds, seals saddle labels up to 10½" wide. Available with Hole Punch, Date Coder . . . and NOW automatic Price Imprinter!

MERCURY Heat Sealing Equipment Co.
2601 N. HOWARD ST. • Phila. 33, Pa.

curing, pressure-sensitive Teflon impregnated fiberglas tape. It is recommended as a non-stick surfacing for heat-sealing bars on packaging machinery. It is produced by a process which eliminates the need for etching (and thereby degrading) the Teflon backing. Its temperature range is from -100°F. to 500°F. The tape is available from stock in rolls 18 yds. long, and in the following widths: ½, ¾, 1, 1½ and 2 in. Circle No. 13.

Bundling Machine

Battle Creek Packaging Machines, Inc. announces Model 850 "Texpaker". As each package is fed into the machine, it starts a complete wrapping cycle which consists of unlocking and cutting off the sheet of paper, forming the folds, heat sealing or gluing the folds and discharging the finished package into a set of conveyor belts. 4, 6, 8 or 12 smaller packages can be wrapped without the need for bottom supports.



The machine is completely automatic and operates at speeds up to 18 units/min. With bundle arrangement of 12 to the package, it can take the output of 180/min. production line. Package sizes vary from 5 to 12 in. long, 4 to 10 in. wide and 1 to 8 in. high. With the "Trilock" fold (longitudinal seam on the broad panel), it requires 10 min. for size changeovers; with envelope type fold, changeovers take from 20 to 30 min. Circle No. 14.

Gummed Label Paper

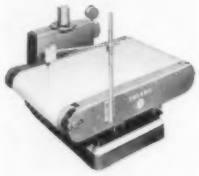
Mid-States Gummed Paper Div., Minnesota Mining and Manufacturing Co., announces "Prone", a "relaxed" gummed label paper. Labels printed on Prone readily conform to any shape, stick fast and stay permanently bonded. Prone is made with a new chemical adhesive which is dimensionally compatible with the paper stock in its expansion and contraction, allowing the paper to remain flat. Prone stays flat even when subjected to a wide variation in temperature and humidity condition. It riffles, jogs, conforms easily and sticks fast to shapes on which it is applied, Mid-States says. Circle No. 15.

Conveyor Product Labeler

Derby Sealers, Inc. announces its Dispens-a-Ply product labeler that will apply pressure-sensitive labels directly to a product. Pressure-sensitive labels in roll form that have been previously die-cut by a converter are removed from backing paper automatically and applied to a number of products of different sizes and shapes. It features an adjustable head mechanism that can be positioned horizontally, raised or lowered with quick adjustments and a 6 ft. belt-type conveyor section with variable speed controls. The head mechanism can be installed on existing conveyor facilities. It handles labels up to 3 in. wide. Circle No. 16.

Automatic Checkweigher

Toledo Scale, Div. of Toledo Scale Corp., announces an automatic checkweigher designed to check the weights of item from 50 to 200 lb. Designated Model 9460, it is



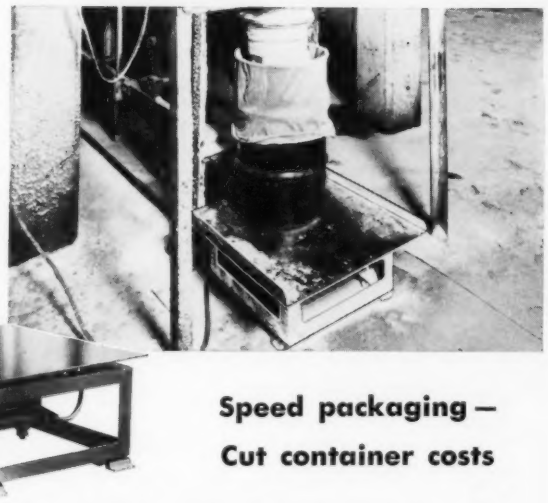
equipped with a belt-type motorized conveyor, and provides 100% in-line checkweighing. Checkweighing is continuous, without stopping the item on the scale. Remote zone indication stations can be furnished that provide a visual check of the operation. Packages (depending on size) can be handled at speeds up to 40 items/min. with accuracy of approximately one part in 3000. Circle No. 17.

Anti-Skid Paper

Hollingsworth & Whitney, division of Scott Paper Co., announces development of "Gripper-Kraft," a new anti-skid paper for the exterior ply of multiwall bags. In contrast to previously used methods of non-slip coating application, the new paper is treated with a special anti-skid chemical while on the paper-making machines, according to Hollingsworth & Whitney. The maker also reports that its new paper meets all government specifications and has a porosity of 10 sec. maximum. According to tests reported by the manufacturer, bags made of Gripper-Kraft showed 15% less slippage than bags made of its own rough-finish kraft when tested on an inclined plane. It also proved superior on metal chutes. Circle No. 18.

SYNTRON Pulsating Magnet

VIBRATORY PACKERS



Speed packaging —

Cut container costs

—by increasing the net weight content of shipping containers.

SYNTRON Vibratory Packers provide efficient materials compaction for faster, more profitable packaging.

Most materials respond to the proper amplitude of vibration by settling and compacting. SYNTRON Vibratory Packers produce 3600 powerful, rheostat controlled vibrations per minute that will increase the net weight content of containers.

SYNTRON Vibratory Packers are built in a wide variety of sizes. They offer rugged, dependable operation with very low maintenance.

For all your bulk packing operations investigate SYNTRON Vibratory Packers.

Write for complete catalog data—FREE

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269 Lexington Avenue Homer City, Penna.

Other SYNTRON Equipment of proven dependable Quality

HOPPER LEVEL SWITCHES

BIN VIBRATORS

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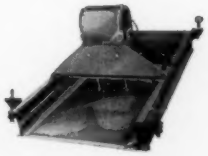
SPIRAL ELEVATOR CONVEYORS



VIBRATING SCREENS

Industry literature available free

1. Beneath each announcement is a code number. As you select items on which you want more information, *note* this number.
2. Now, *circle* the corresponding numbers on the postcard, located inside back cover.
3. Next, *fill* in your name and address.
4. Then, *mail* the card — we pay the postage.

Adhesives For Transparent Films

Morningstar-Paisley, Inc. offers "Guide to Adhesives for Transparent Films and Characteristics of Transparent Film Adhesives." Included is a table listing popular types of transparent films suggesting the types of adhesives applicable for a number of uses, such as transparent bags, window bags, window boxes and laminations. The adhesives listed can be used with the existing machines normally used by converters. Circle No. **101.**

Electronic Counters/Controls

Post Machinery Co., Electronics Div., offers Bulletin B which briefly describes its line of electronic counters, controls, photoheads and accessories. It is profusely illustrated. Circle No. **102.**

Engineer's Checklist

Riegel Paper Corp. has a packaging engineer's checklist for the selection of flexible packaging materials. This list not only covers 21 points which a packaging engineer must check but also has an enumeration of simplified explanations of factors that arise in material selection. Circle No. **103.**

Carton Filling And Sealing

FMC Packaging Machinery Div., Stokes & Smith Co., offers an 8-page folder describing its complete line of Neverstop automatic carton filling and sealing machinery which handles free-flowing products. Specifications for six models of this machine are included, offering a wide choice of speed, carton size, glue, filling method and optional equipment. Circle No. **104.**

Cellophane Storage

American Viscose Corp. has a folder on the storage, handling and application of its cellophane. This includes twelve rules deserving attention, as well as a checklist of things to do to get maximum benefits from this film. Circle No. **105.**

Bag Former, Filler, Sealer

Triangle Package Machinery Co. offers a 4-page folder describing its Model L-2 bag maker with Elec-Tri-Pak scales. This machine forms, fills and seals bags up to 7 in. wide and 14 in. long at speeds ranging from 40 to 55 bags/min., depending upon the size of the pouch. The Model L-2 handles polyethylene, cellophane, K-films, single or double-wall bags, pouch paper or Poly-Cel. Circle No. **106.**

Tablet Filling Machine

U. S. Automatic Box Machinery Co. is offering an information sheet on its Model TBS, a straight line, fully automatic tablet and pill counter and filler. It will count any number (odd or even) into bottles, cartons, boxes and other rigid containers. Changeover of count, container or product can be made quickly. Modifications allow its use for either large volume speed packaging or for packaging many different shapes and sizes in different containers. Circle No. **107.**

Automatic Air Cleaners

U. S. Bottlers Machinery Co. has issued a brochure discussing its Sanitair automatic compressed air cleaner, now available in two models. Model DS-12 handles from 50 to 275 containers/min., and Model DS-8 can handle from 35 to 140 containers/min., depending on container size and design. Both machines feature duplex stations which carry two containers through the cleaning operation in opposed position so that one is inverted while the other is uprighted for discharge. Circle No. **108.**

Steel Drums

Vulcan Containers, Inc. offers literature on its various types of drums. Included in one folder are descriptions of open head and tight head drums (55-gal. capacity), 15-gal. drums (both open and tight head), grease drums (120-lb. and 100-lb. capacity), and 55-gal. agitator drums. All drums are available with a choice of interior: Palin steel, rust preventative, or HI-BAKE protective lining. Exteriors on all drums may be painted to individual specifications. Circle No. **109.**

Plastic Containers

Celluplastic Corp. has a colorful brochure illustrating a wide range of stock plastic vials and jars. The line includes rigid polystyrene vials from 3/8 to 2 in. in diam., with lengths up to 6 in. Extruded flexible acetate and butyrate vials are available in diam. from ½ to 1⅝ in., in almost any desired length. Also described is a line of squat jars in sizes up to 16 oz. The vials come in crystal clear plastic as well as in a variety of colors. Multicolor printing of label or trademark is available. Circle No. **110.**

Pressure Packaging

Crown Cork & Seal Co., Inc. has a looseleaf-type manual containing information of special interest to companies already engaged in or considering entering the field of pressure packaging. Sections in the manual include one on how pressure packaging works; others on two ways to package under pressure, basic steps to pressure packaging your product, selecting your container and public regulations affecting pressure packaging. Circle No. **111.**

Taping And Labeling Equipment

Better Packages, Inc. has Catalog #107 available fully describing 58 models of both its sealers and Counterboy line of taping and labeling equipment. Specifications and prices are included. Circle No. **112.**

Packaging Films

Celanese Corp. of America has a folder containing information on its many types of plastic films. Included are discussions of Fortiflex, a linear polyethylene available in bottles and jars, as well as in sheeting for formed packages of all types, including food containers; acetate film for window boxes, bags, wraps, tapes and laminations; Fortiflex-A, a polyolefin plastic used in injection molded or blown bottles and containers; polyvinyl acetate emulsions for container coatings, and other materials. Circle No. **113.**

Polystyrene Packaging Film

The Dow Chemical Co. offers literature on its new low-cost polystyrene film, Trycite. Among the advantages claimed for this film are its clarity, its food chemical resistance and its excellent mechanical properties. A breathing film, Trycite does not absorb moisture, distort, or become brittle, Dow says. Packaging applications now include use in food and textile plants, with good possibilities of use in such fields as confectionery, cleaning, dairy goods, drugs, wearing apparel and variety items. Circle No. **114.**

Polyethylene Resins

The Polychemicals Dept. of the DuPont Co. offers Bulletin A-2163. It lists 13 different grades of polyethylene resins engineered for specific packaging needs. Included is a comparison chart showing the melt index, density, molecular weight distribution, properties and packaging applications for each type of resin. Circle No. **115.**

Cellulose Sheeting

Eastman Kodak Co.'s Cellulose Products Div. offers a 4-page bulletin, "Properties of Kodapak Sheet," a thermoplastic cellulose ester sheet. Graphs and charts outline the physical properties of the three available types. Circle No. **116.**

Automatic Checkweighing Machines

The Exact Weight Scale Co. offers literature on its Selectrol automatic checkweighing machines. Available in two models, #144 and #145, the Selectrol machine is used for checkweighing, classifying, recording and sorting. It utilizes Shadograph scales. An automatic transfer mechanism places the commodity on, and removes it from, the scale. The two models are said to be capable of

proving weight accuracies in the range of 1 part in 5,000 to 1 part in 20,000. Circle No. **117.**

Semiautomatic/Automatic Fillers

J. L. Ferguson Co. has a 4-page bulletin on its automatic and semiautomatic filling machines for semi- and non-free-flowing products. The fully automatic telescoping volumetric filler fills cans or cartons at speeds up to 300/min. Auger packer and auger packer-weigher will fill bags, round or rectangular cans or cartons in a wide variety of sizes. Engineering drawings illustrate all machines. Circle No. **118.**

Automatic Cartoners

R. A. Jones & Co., Inc. offers two models of its CMV automatic cartoning machines in an 8-page brochure. These units take a flat carton from a magazine, open it, tuck bottom flaps, convey open carton past manual loading stations, tuck top flaps and deliver the loaded carton. Cartons handled range from ½ x ¾ x 2½ in. to 4¼ x 4¼ x 9 in. Circle No. **119.**

Plastic Vials

Lermer Plastics, Inc. has an illustrated data sheet listing various sizes of its stock line of plastic transparent vials. Available in minimum quantities of 1,000, you can choose between threaded vials with metal screw caps, shoulder vials with polyethylene slip-on caps, or shell vials with polyethylene plug closures. Sizes range from ½ by 2 in. to 1 by 4 in. Circle No. **120.**

Polyester Film

Minnesota Mining & Mfg. Co. has issued a brochure listing various applications for its Scotchpak brand heat sealable polyester films. Described as being transparent as cellophane and flexible as thermoplastics, these polyester films are now being used for the packaging of such diversified products as chemicals and metal hardware, food and paint pigments, detergents and caulking compounds, and the like. The brochure also presents a properties and characteristics chart on the films. Circle No. **121.**

Protective Paper Sample Kit

Thilmany Pulp & Paper Co. has prepared a sample kit containing many of its plain and printed functional papers, such as polycoated, glassine, kraft, moisture vapor barriers, and so on. Circle No. **122.**

Aluminum Packages

Kaiser Aluminum's folder FK 859 tells of its ACT (Aluminum Consulting Team) approach to solving packaging problems. It involves specialists in package development, package design, process development, packaging equipment and research and food technologists. Circle No. **123.**

Acid Filling Machines

Eyrle Co. has published data sheets and operating instructions on its filiers BF1 and BF2. Contact parts are stainless steel and plastic so they are suitable for filling corrosive liquids. Circle No. **124.**

Package Tying Machine

B. H. Bunn's 8-page brochure illustrates many uses for its package tying machine. It automatically wraps twine around any package or

It can't be just "adequate"...

PACKAGE MARKING
either makes money or wastes it

Readable, attractive marking made by Markem machines on your boxes or labels helps them from the moment they're marked to the time they're used — and can even help future sales as well. Good marking speeds handling . . . reduces waste and packing errors . . . allows quick selection by customers . . . simplifies and encourages reordering . . . carries the "quality" message of modern package design.

In contrast — *hard-to-read, uneven, "home-made" marking is a hindrance to your package or product from beginning to end* — and can actually waste thousands of dollars a year.

And a Markem marking method makes important "in-plant" savings as well. The right Markem machine, type and specialty ink working in your plant marks the *right* quantities at the right time — with savings in inventory, labor and delivery time . . . eliminates waste from obsolescence . . . handles "short runs" rapidly and economically . . . provides flexibility that allows *one machine to do a variety of marking jobs.*

Call your local Markem man or write directly, enclosing samples and requirements. Markem Machine Co., Keene 35, N. H.

MARKEM

everything industry needs . . . for profitable marking . . . since 1911

bundle that can be tied by hand regardless of shape or size. It automatically adjusts to package size, ties non-slip knots and cuts knot at average speed of 2 sec/bundle Circle No. **125.**

New Packages

Western Waxide Div., Crown Zellerbach Corp., has published an 8-page brochure giving data and illustrations on several of its new developments, including Crown Polypak, a dispensing type package for free-flowing vegetables; Crown Poly cook-in-pak, a boilable package, and Crown Poly pak-in-carton, a heat sealable pouch in a carton. Circle No. **126.**

Liquid/Semiliquid Fillers

FMC's Canning Machinery Div. has a 16-page booklet #501E255 on its M & S fillers. Models illustrated run from 30 to 6-pocket machines. Included are several charts; one that groups products handled by typical viscosity classes, such as dog food, petroleum, baby food, etc. Various attachments are illustrated as well as a number of plant operations. Circle No. **127.**

Fibrous Silicone Rubber

The Conn. Hard Rubber Co. offers samples and data on its silicone rubber product called Cohrlastic FSR. Resembling sponge and foam in properties, Cohrlastic FSR has, its developers say, tensile and tear strength superior to silicone sponge and foam. Its density is in the range of 20 lbs/cu. ft., and its useable temperature range is -65°F. to 500°F. Available now in sheets ¼ in. thick, 9 in. wide and 6 ft. long. Circle No. **128.**

Heavy Duty Heat Sealer

Wrap-Ade Machine Co., Inc. offers a data sheet giving specifications for a pneumatic heat sealer. This machine heat seals bags, pouches, envelopes, barriers, etc., made of kraft and scrim-backed laminates, cellophane, foil, pliofilm, etc. The unit features automatic control of pressure up to 1,187 lb., dwell up to 15 sec. and heat up to 550°F. Circle No. **129.**

Silicone Coatings

Dow Corning Corp. has a brochure, "Nothing Sticks to Paper with Syl-off Silicone Coatings," and a list of manufacturers who make end products with Syl-off coated paper and those who make paper coated with Syl-off. The brochure lists various advantages of using Syl-off. Circle No. **130.**

Corrugated Shipping Containers

Gaylord Container Corp., Div. Crown Zellerbach Corp., has released an 18-page brochure called "Corrugated Boxes for Electric & Power Equipment." Case histories of savings in packaging and materials handling achieved by using corrugated containers are included in the brochure. Products covered include electric motors, tractor parts, electric controls, gasoline engines, and water pumps. Circle No. **131.**

Polyethylene Processing Tips

U. S. Industrial Chemicals Co. has a new folder on polyethylene processing tips in a handy reference file design. Some of the tips are: conditions which affect stress-crack resistance; how to predict end-properties of blended resins; the effect of resin density on film properties and extrusion conditions; and how to avoid wrinkles in extruding blown tubing. Guide chart listing the resin properties essential for best results in specific applications and the particular U. S. I. Petrothene resin recommended is also included. Circle No. **132.**

Polyflex Film

Plax Corp. has a folder on its oriented polystyrene film, Polyflex. A 0.002-in. sample of the film is included which visually demonstrates its clarity and ability to stay flat. Many characteristics are listed, including machinability, dimensional stability and savings compared with other packaging films. Circle No. **133.**

Plastics Forming

Emhart Mfg. Co., Portland Div. is offering an illustrated folder describing all basic plastic forming methods. In addition, a detailed information sheet on each type of forming machine manufactured by Emhart is included. Circle No. **134.**

Label Printing

Markem Machine Co. offers a folder, containing samples, which discusses the advantages of using model 88A label printer over buying completely printed or stamped labels. The machine is adaptable to any labeling operation requiring a change in products, weights, prices, etc. Major features are: sharp clear labels, comparative economy and short downtime for changes. Circle No. **135.**

Skin/Blister Forming

Atlas Vac-Machine Corp. offers a 4-page folder, illustrating and describing in detail its line of forming equipment. Many sizes and types of machines are discussed, from those ideally suited for laboratory work to those intended for large scale automatic production. Circle No. **136.**

Stencil Inks

Reynolds Ink, Inc. offers an illustrated 4-page bulletin, No. 58, showing applications of its stencil inks from spray cans. Bulletin also describes its layout fluid, spray guide which keeps can in correct position for a given stencil, and stencil-kover which covers old stencils, labels or any other markings. The nine colors available are shown, and a price list is included. Circle No. **137.**

Suspension-Packaging Product

Vanant Co., Inc. offers a manual on its suspension-packaging product, Sus-Rap. The manual contains facts and data, benefits and uses in packaging products ranging from television sets to panoramic windshields to slabs of marble. Also included is complete data on Vanant facilities for design and testing of packaging to meet National Safe Transit Committee standards. Circle No. **138.**

Innersealer For Friction Lids

Resina Automatic Machinery Co., Inc. offers a catalog sheet on its Model CIS-A innersealer for friction lids. This completely automatic machine sorts, feeds and applies friction lids to various sizes of round and rectangular fibre or metal cans having metal tops, such as used in powder or grated material industry. Speeds range from 40 to 120/min., depending on the size of the canisters and lids. Circle No. **139.**

Anti-Slip/-Soil Coating

Monsanto Chemical Co.'s Inorganic Chemicals Div. has a technical bulletin on the use of its Syton P (colloidal silica solution) as an anti-slip and anti-soil coating on bag and paperboard carton surfaces. Bulletin describes physical and chemical properties, details application by spray and roll methods and gives general handling information. Circle No. **140.**

Petroleum Products Gravity Fillers

Horix Mfg. Co. offers a line of petroleum products gravity fillers in an illustrated brochure. Machines fill motor oil, brake, and cleaning fluids, anti-freeze, etc., in "F" type, sanitary and cone top cans. Low or high speed units are available. Circle No. **141.**

Automatic Case Gluer Stacker

Crompton & Knowles Packaging Corp. has available a descriptive folder on line of case gluers, and model RFCS automatic stacker. Specifications for two models (17 & 17B) including line drawings are given. Case lengths of 8 to 30 in. widths of 5 to 24 in., and heights of 4½ to 24 in. can be handled at speeds up to 30 cases/min. The machines have many features; fast change, safety and construction are discussed in detail. Circle No. **142.**

Liquid Filling Machines

M.R.M. Company, Inc. has an 8-page catalog describing and giving specifications of its gravity, vacuum and volumetric fed liquid filling machines. These machines will handle every type and shape container (glass, metal or plastic) from fractional oz. to carboys. The catalog is divided into 4 parts—fully automatic rotary type fillers, semi-automatic straight line, special machinery covering odd shaped containers & aerosols, and available accessories. Circle No. **143.**

Low-Molecular-Weight Polyethylenes

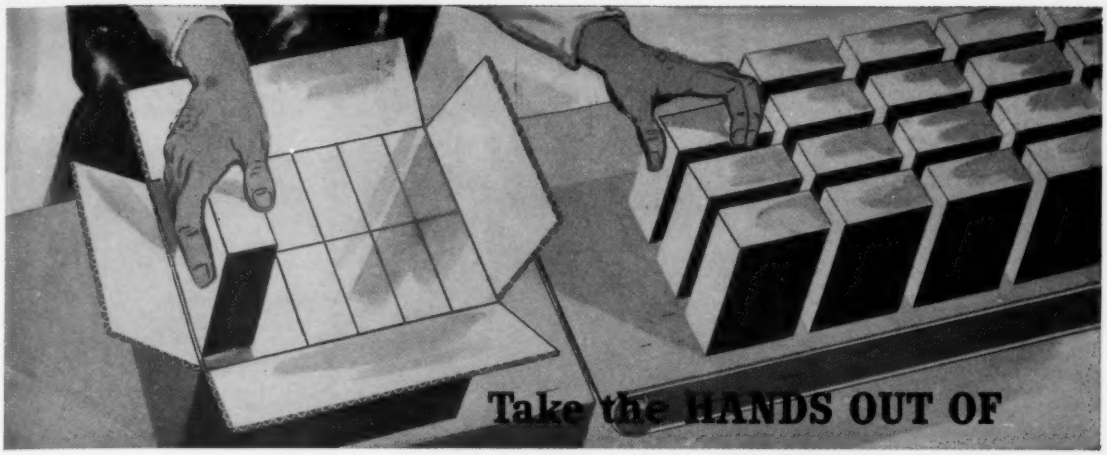
Eastman Chemical Products, Inc., Div. of Eastman Kodak Co., offers Bulletin No. F-102 on its Epolene N, a nonemulsifiable polyethylene, for direct blending with paraffin and similar materials, and on Epolene C, also nonemulsifiable but of higher molecular weight, designed for preparing of polyethylene-coated papers and slush- and cavity-molded objects. This 24-page, illustrated bulletin includes the following data for each type: General characteristics, applications, application techniques, typical properties, melt viscosities, and many more. Circle No. **144.**

Feeders/Feeder-Cleaners

Machinery Service Co. has a 4-page illustrated folder on its feeder-cleaner and bottle-feeder. The cleaner air-cleans oddshaped or conventional containers and feeds them directly to filler. Bottle-feeder features adjustable speed control, easy changeover to different size containers, combination tilt and stationary dump-tray for safe unloading of empties. Circle No. **145.**

Release Agent

Dodge Fibers Corp. offers a 4-page illustrated brochure on its Fluorglas, pressure sensitive Teflon coat-

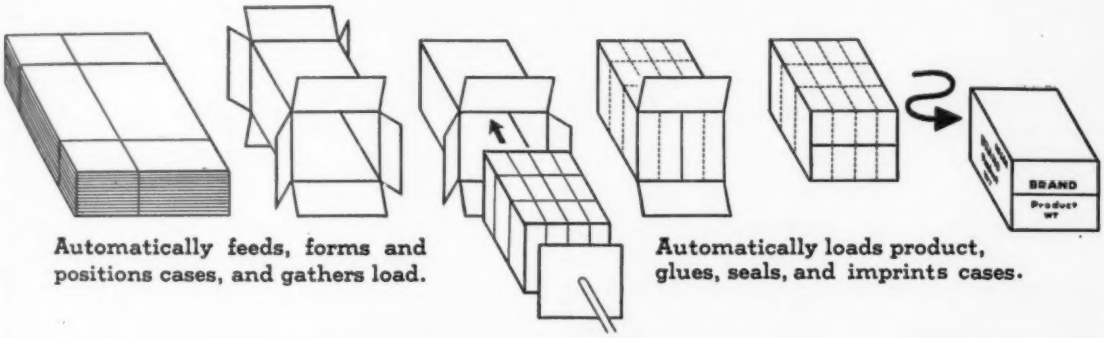


Product Handling

let Packomatic® equipment do any or all

T.M. Reg. U. S. Pat. Off.

your casing operations AUTOMATICALLY:



Automatically feeds, forms and positions cases, and gathers load.

Automatically loads product, glues, seals, and imprints cases.

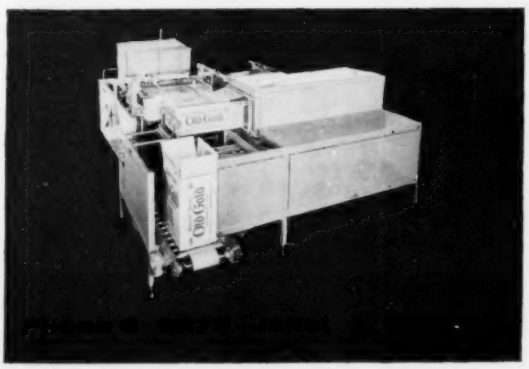
For casing round, square, rectangular, or free-form packages of virtually any size.

If you employ even one person per shift to hand-form cases, or to hand-pack, hand-seal or hand-imprint them, then it can pay you to install Packomatic equipment. And if you employ two or more people the savings can increase proportionately. Even a **complete** automated Packomatic line requires only a minute or two of attention at infrequent intervals to match the output of a dozen pair of hands. And in addition to reducing your direct labor production costs Packomatic can, by utilizing end-opening shipping cases, reduce paper-board costs up to 25%. And mechanically end loaded cases are stronger too, because the flaps give added resistance to weight and shock. In addition, they stack better because their uniformly flat sides enables keying of pallet loads. Write, wire or phone us for facts on how to reduce your casing costs.

PACKOMATICS include Case Sealers • Case Opener-Loaders • Case Packer-Gluers • Case Imprinters • Bale Sealers • Automatic Equipment for Shelf Carton Making, Feeding, Filling and Closing • Round Paper Can Mfg. Equipment

J. L. FERGUSON COMPANY - Box 1226

FOR EXAMPLE: This Packomatic machine at the P. Lorillard Co. automatically forms and positions cases, end-loads regular or king-size cartons of Old Gold cigarettes (60 cartons per case) and up-ends cases for sealing — at the rate of 400 cartons per minute, or nearly 5 million smokes per hour.



ed glass fabric. Fluorglas can be applied to guide rails and conveyors of bottling and canning equipment to prevent glass to metal or metal contact that causes scratches, wear, noise, and damage to labels. Brochure gives specifications for the five types of Fluorglas, graphs showing the shear and peel strength, samples, properties, products and uses, and a price list. Circle No. **146.**

Switch-Indicator Devices

Micro Switch, Div. of Minneapolis-Honeywell Regulator Co., has a 20-page catalog, No. 67, "Series 2 Lighted Indicator and Pushbutton Switch Devices." Designed for control panels, parts snap together to form combination switch-indicator devices. The catalog gives full dimension drawings of major items —operator units, indicator units, and switch units. Also technical information is given on lighting, indication, mounting and arrangement. Circle No. **147.**

Pliability Tester

American Instrument Co., Inc. offers a complete description of the Aminco Pliability Tester in Bulletin No. 2316. This instrument stimulates the action of wrapping a paper-like material around an object and measures the paper's resistance to this operation. It is portable, self-contained, and has a sample cutter which cuts identical samples for each test. Circle No. **148.**

Plastic Packages And Displays

Hopple Plastics, Inc. has a 4-page brochure on its clear-view plastic packages and hi-relief plastic displays. Vacuum formed blisters, slide packs, skin packages and food packages are some of the types of packages. The display signs are of 3-dimensional construction and have a self-adhesive strip for easy application. They can be lithographed or silk screened and come in sizes up to 6 ft. long x 3½ ft. wide and 12 in deep. Circle No. **149.**

Heavy-Duty Corrugated

Stone Container Corp. offers a 4-page illustrated folder and sample of its heavy-duty, humidity-resistant corrugating medium (Stone-Cor) for shipping containers. Laboratory tests are reported, showing that 200-lb.-test single wall corugated box with special medium exceeds (by 33% to 77%) stacking strength of 200-lb.-test regular box. Chart shows advantage of 200-lb. special board over 275-lb. regular board. Circle No. **150.**

Butter Packaging Machine

Western General Sales Corp. offers a 4-page illustrated brochure on Butter-Pak, a machine that forces bulk butter through a stainless steel extruder, forms the butter into patties of predetermined count and individually wraps each patty in cellophane and foil. Heat and pressure are used to seal the package. With three operators, the production rate is 1000 lb/hr. Circle No. **151.**

Table Top Printer

W. H. Brady Co. offers bulletin No. 535 which gives specifications and prices for its Printamatic (automatic label printer-die cutter). The Printamatic simultaneously prints, die-cuts and dispenses pressure-sensitive labels from any liner mounted roll tape, at the rate of approximately 110 average size labels/min. Rubber copy plate is changed in 30 sec., ink color or dies in less than one min. Circle No. **152.**

Cushioning Material

Kimberly-Clark Corp. has a 4-page folder on its interior packaging material, Kimpak super crepe. The folder includes performance curves and specification chart. Kimpak super crepe comes in rolls or sheets with a full line of backing papers. Thickness ranges from 0.04 to 0.50 in. Circle No. **153.**

Spray Applicator

Ortman-McCain Co. offers a 4-page bulletin describing its spray applicator device for applying non-skid coating—colloidal silica—to boxboard during the manufacturing process. Spraying is accomplished by nozzles which can be adjusted to control depth of penetration. Circle No. **154.**

Corrugated Board

Hinde & Dauch Div., West Virginia Pulp and Paper Co., offers a 4-page folder of technical information on M/R (moisture-resistant) corrugated board. Description, specifications, performance data and characteristics of the four M/R grades available are also included. Circle No. **155.**

Corrugated Packaging Problems

Hoerner Boxes, Inc. offers a 12-page brochure describing corrugated packaging problems and solutions. Actual case histories involving shipping problems are included for products ranging from bicycles to dog food. Circle No. **156.**

Automatic Weight Control

Richardson Scale Co. offers Bulletin No. 0557, which discusses its Select-O-Weigh system for providing complete automation in continuous or batch processing operations, including record keeping. This six-page brochure explains how the Select-O-Weigh remote control panel provides a system of electrical controls that directly operates feeders, scales, conveyors, buckets, or any other equipment used in proportioning, blending, or mixing various materials. Four basic control panels are illustrated. Circle No. **157.**

Foamed Plastic Polyurethane

American Latex Products Corp. has literature on its Stafoam rigid, semi-rigid, and flexible polyurethane. This material has such diversified uses as thermal insulation, corner support blocks, fabrication or "potting" of delicate packs for electronic instruments, high vibration-proof wrapping material, and related applications. It can be applied by spray gun, poured-in-place, fabricated with woodworking tools, cemented, or injected with available production machinery with the foam ranging in density from 1.5 to 70 lbs./cu. ft. Circle No. **158.**

"Teardrop" Container Former/Filler

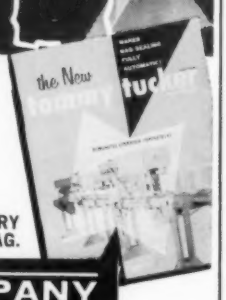
Ketchpel Engineering Co. offers circular F-322, which describes its Uni-Pak machine. The Uni-Pak makes, fills, and seals teardrop-shaped packages ranging from 7/8" to 1-1/2" in diameter. It utilizes most heat-sealable materials. Designed for automatic operation in packaging single-measure units, the machine will fill 60 pkgs./min. The

Completely Automatic

BAG CLOSING OPERATION!

SAVE A SALARY EVERY WEEK WITH THE New FRY "TOMMY TUCKER"

■ Here is the answer to the great demand for a **fully automatic** bag closing line, the FRY Tommy Tucker Machine! Not only does it eliminate two steps formerly requiring the services of an operator, but also has proven itself **100% trouble-free** under strenuous production conditions! Plus—now you can speed up production— up to 50 bags per minute—and yet produce neater, uniform appearing packages. Designed to operate between Fry Closing Machines and V-30 Vibrator, the Tommy Tucker will, **1**—tuck the bag ends and, **2**—flatten the bag top for proper feeding into the CBG machine. No synchronization necessary—no bag jamming possible and **no operator** needed!



WRITE FOR NEW, INFORMATIVE LITERATURE ON ALL FRY MODELS. PLEASE ENCLOSE SAMPLE OF PRODUCT & BAG.

GEORGE H. FRY COMPANY

42 East Second Street, Mineola, N. Y. — Pioneer 6-6230

Uni-Pak is available in Model 11-00, which is designed for use on free-flowing granular materials and is equipped with a metering wheel feed, and Model 11-19, which is designed for use on powdery materials and has an adjustable auger feed mechanism. Both models of the Uni-Pak have a 26-gal. hopper capacity, six station "Geneva" table, paper end stop switch, motor switch, and 3/4 h.p. motor. Circle No. **159.**

300/Min. Labeler

New Jersey Machine Corp. has published an 8-page illustrated brochure on the "Pony 300" labeler. This machine handles round and Blake bottles and accommodates label sizes from 5½ in. wide x 5 in. high to as small as 1¼ in. wide x ¾ in. high. Its variable speed control provides adjustment for production rates from 120 to 320/min. Detailed illustrations of operating features are included in the folder. Circle No. **160.**

Bench Model Net Weigher

National Instrument Co. has just introduced a new automatic net weighing machine that is described in a current data sheet. It automatically net weighs and dispenses into containers any free flowing, dry product that will pass through a hopper, such as powders, seeds, tablets and tacks. This unit is very compact and features a variable filling rate from 0 to 15 weighings/min., a capacity from 0 to 40 ozs. with 1% accuracy. No lubrication is required. Detailed specifications are provided for three different types of this machine. Circle No. **161.**

Pharmaceutical Sample Mailers

Metal Edge Industries has released a brochure of specific interest to the pharmaceutical industry. It outlines the advantages that metal edge boxes offer in pharmaceutical detailing and gives a thorough description of how this method of sampling can effect substantial savings. Circle No. **162.**

Shipping Case Closer

Container Stapling Corp. has a data sheet on its Model M "Clip-Top" packer, used for manual closing of shipping cases. It seals filled containers from without and also sets up flats, ready to be filled. An adjustable anvil staples A, B, or C flutes through use of an adjustor screw that controls the staple clip for any flute thickness. Circle No. **163.**

Packaging Station

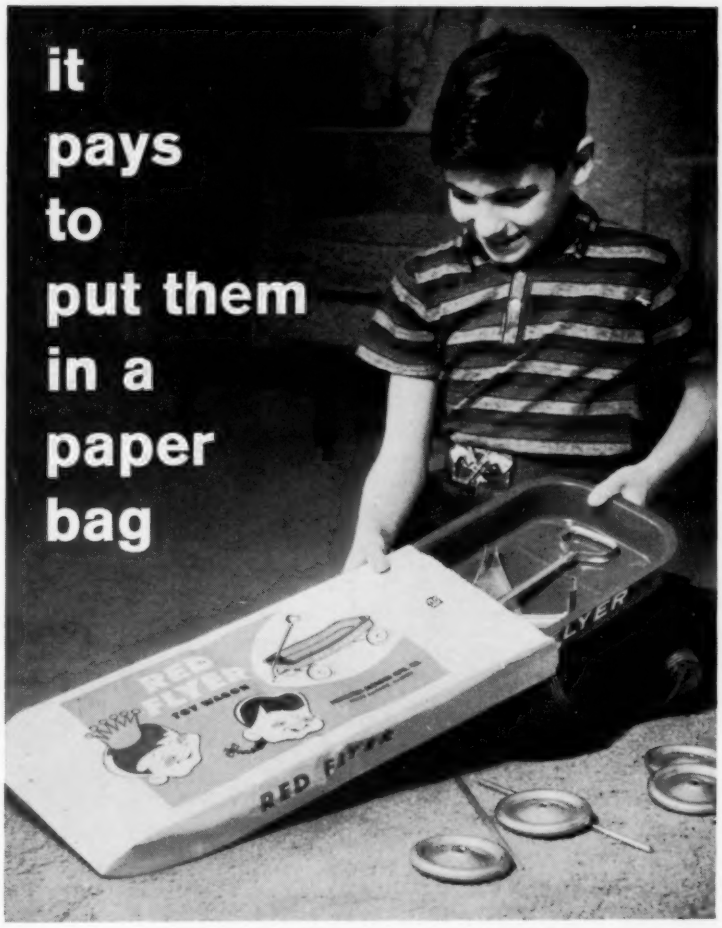
J. B. Dove & Sons, Inc., has a catalog showing its Model PW-5 packaging station, designed to combine cutting, wrapping, and sealing operations. Developed especially for self-service produce packaging operations, the machine features a film dispenser holding three or more rolls of different sized films; a stainless steel finger guide to support the film; and sealing on a teflon-covered plate. Circle No. **164.**

Vibratory Feeders

Syntron Co. offers complete information on their electromagnetic vibrating feeder for bulk materials. Movement of parts is achieved by the electromagnet drive which produces 3600 vibrations/min. controlled by a rheostat. This machine can be used in fabricated metal produdts manufacturing operations, and it also feeds parts made of wood, plas-

when you pack "knock-downs" for

HOME ASSEMBLY



Compact, convenient paper bags make excellent security agents for packaged home-assembly products. They speed packing, help lower shipping and handling costs, conserve valuable warehouse and shelf space.

Take the toy wagon bag, above. It packs 22 put-'em-together metal parts. Bag replaces carton, is lighter, less expensive. Colorful printing serves as economical advertising for brand name and contents.

Write for free Booklet CP-1 today. It illustrates dozens of different ways paper bags are helping manufacturers save money, both inside the plant and out.

union camp

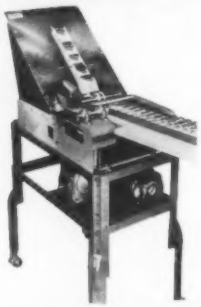
Commercial Packaging

UNION BAG-CAMP PAPER

CORPORATION

233 BROADWAY, NEW YORK 7, N. Y.

PRESENTING THE NEW LABELETTE



Designed To Make Your Labeling Efficient, Speedy, Economical

- Easy to fill and clean.
- Labels glass, tin or fiber containers.
- Newly designed patented glue firm lock.
- Accurate, precision labeling.
- Easy to operate and maintain.
- Quality component parts, extra low price.

Call FR 2-1215, write, or come in for a free LABELETTE demonstration.

LABELETTE COMPANY
216 South Jefferson
Chicago 6, Illinois

Circle No. 257 on Card

Good news for users of tape

Here's the latest idea in sealing cartons... the DIAL-TAPER. You dial the length of tape and the DIAL-TAPER does the rest automatically ...measures tape accurately, moistens tape with warm water and cuts off clean.

Users report "up to 50% saving in TIME, 25% saving in TAPE, plus stronger, neater package. Tape sticks tight with one pass of the hands." Used by U. S. Government, Ford, General Electric, all types of business.

For free booklet DT-5 write to Marsh Stencil Machine Company, 34 Marsh Bldg., Belleville, Ill. T-23

tic, rubber and similar materials. Circle No. **165.**

Compressed Gas Applications

Air Reduction Co., Inc., has published a brochure showing how their representatives work to solve packaging and processing problems involving the use of compressed gases. Titled "New Opportunities for More Profitable Packaging," it covers blanketing, purging, quick freezing, chilling and carbonation applications. Circle No. **166.**

Transparent Vinyl Film

Clopay Corp., Plastic Films Div., offers an information and technical data bulletin describing Clopane, a clear vinyl film. Available in ten different thicknesses ranging from .00075" to .0100", this material prints well, is tough, can be heat or adhesive sealed, is moisture and crack-proof, and can be sewn or stapled. It is adaptable to the packaging of a wide variety of non-food products such as textiles, hardware, toys, etc. The bulletin contains price sheets, a yield chart, and a table listing chemical and physical properties. Circle No. **167.**

Carton End Gluer

Alford Package Machines, Inc., offers complete facts on its Mini-Sealer, a semi-automatic end gluer which delivers over 20 sealed cartons/min. with one operator. It is portable (weighs under 100 lb.), made of stainless steel, and takes less than 4 sq. ft. of space. Circle No. **168.**

Explosives Bags

Bemis Bro. Bag Co. offers an 8-pg. booklet on the use of their explosives bag. For packaging industrial explosives mixtures, it is constructed of a 3-ply Flexiply (multi-ply creped kraft paper) outer tube and a specially-extruded pinhole-free seamless polyethylene liner. The liner can be heat-sealed through the outer tube for a waterproof closure. It is also resistant to oil. Circle No. **169.**

Shipping Room Equipment

Seal-O-Matic Dispenser Corp. has catalogues available which describe their various models of tape dispensers, label moisteners, and utility knife. Blade of knife is hidden and protected when not in use; simple thumb pressure exposes blade which snaps back automatically. Circle No. **170.**

Fill Control Unit

Electronics Div., Curtiss-Wright Corp., offers a data sheet on the "Correct Fill Monitor." This is an electronic unit that inspects closed opaque containers for correct height of filled product—liquid or dry. It is accurate, simply constructed and can be operated under conditions of heavy vibration. Circle No. **171.**

How To Use Vacuum

Leiman Bros., Inc., offers a reprinted article entitled, "Medium Vacuum as a process tool." It tells what vacuum is, how it is measured, plus a round-up of applications, including those in the packaging field. Circle No. **172.**

Sift-Proof/ Moisture-Proof Bags

Kehr Products Co. has an illustrated information sheet which outlines the characteristics of the "Canvalope." This is a laminated paper bag specifically designed to handle products of extreme fineness, high specific gravity with a high sensitivity to moisture absorption, such as pharmaceuticals, baking powder, cake mixes, etc. This package will endure severe handling. Circle No. **173.**

Automatic Cottoning Machine

The Burnet Co. offers information on its cottoning machine which uses a tucking action. Twin tuckers come down alternately into the neck of the bottle, kinking the cotton and pushing it under the shoulders. Then cotton is pressed to predetermined level and pressure. During part of the inserting operation the bottle rests on vibrating conveyor so that pills can settle for firm pack. Circle No. **174.**

Seamless Aluminum Bottles

American Aluminum Co. has available a 4-pg. brochure with specifications, descriptions and ordering information for their standard stock seamless aluminum bottles from ⅛ to 768 oz. capacities. List of materials that can be packaged, shipped or stored in aluminum without hurting the property value of either is also included. Circle No. **175.**

Bulk Shipping

Package Research Laboratory offers an illustrated booklet, "Expendable Bulk Shipper," dealing with problems of handling granular and powdered materials. It contains construction, assembly, filling, warehousing and freight data on Wirebound-Corrugated bulk shippers. Also comparitive dimensions, weights, number of containers per standard railroad car, on the 50 cu. ft. rail shipper and 22.9 cu. ft. truck shipper. Circle No. **176.**

Industrial Plastics Molding

Boonton Molding Co. offers the 11th edition of "A Ready Reference For Plastics," a detailed book on plastics. Included is information on how plastics came about, how they are used, and why. Physical properties are explained, and the book includes tables and data on a great number of plastic materials. Also included is information on types of molding, elements of part design, and design pitfalls, as well as notes on machining and inserts. Circle No. **177.**

Blister Edge Folder

Taber Instrument Corp. offers Bulletin No. 58103-B on its Model 103-B blister edge folder. This machine is especially designed for folding edges of .005 in to .020 in. transparent blister or "bubble" packages to accommodate a slide-in cardboard bottom. The machine forms the fold in the thermoplastic sheeting by molding the material with the thermostatically controlled heated blade into the desired fold; it then dissipates the heat into the folding bars before releasing the part. A controlled folding cycle enables an average operator to produce 600 to 800 folds/hr. Circle No. **178.**

Heat Test Tanks

The Wallace Co. offers Aerosol Bulletin HT60-120 on its Model HT60 and Model HT120 heat test tanks. The bulletin contains specifications and illustrations of this equipment, as well as listing functions, features, and performance data for the two models. Both are designed

to keep containers clean throughout the bath, feature lightweight nylon conveyor chain, offer uniform heating, assure against jam-ups, and have exterior magnetic assembly to prevent rust. Model HT60 handles a normal capacity of 60 containers/min. and Model HT120 normally handles 120 containers/min. Circle No. **179.**

Laboratory Services

The Wisconsin Alumni Research Foundation Laboratories perform many testing services available to industry. Some of these areas are: General lab services, nutritional food evaluation, feed industry services, bacteriology, food technology, insecticide testing, toxicology, vitamin assays. Circle No. **180.**

Paper Quality Control

Gardner Laboratory, Inc., offers literature describing its various equipment for quality control in the paper industry. Equipment includes Automatic High Sensitivity Brightness and Reflectance Meter, Automatic 75° Gloss Recorder, Recording Reflectometer, Skip Meter (detects "skips" on paperboard), and Self-Standardizing Color Difference Meter. The Color Difference Meter can make over 500 color difference determinations daily in less than 60 sec. each. Circle No. **181.**

Stencil Dispenser & Printing Unit

Weber Marking Systems has a guest literature kit with information about Tab-On stencil dispenser. It operates from a lever that is gently pushed to cut and eject the exact size Tab-On stencil that is used on the invoice or bill of lading. Also included is data on a rapid-dry printing unit complete with handprinter, special pad and extra fast drying ink. It is designed for printing on glossy labels and on cartons where conventional inks are too slow drying. Circle No. **182.**

Electronic Counter

Standard Instrument Corp. has released a 14-page brochure describing the operation of its new Tally-Count predetermining electronic counter, which automatically controls any industrial process involving high-speed counting. Counting capacity of a four-decade machine (used as a predetermining counter) is 10,000; as a totalizing counter with four decades and four digit mechanical register, its counting capacity is 1,000,000. Circle No. **183.**

Vibration/Shock Control Pad

Felters Co. offers samples and specifications for its new Type "S" Unisorb vibration and shock control pad, developed for use in protecting packaged equipment during shipment. The material is said to withstand shear forces of 75 to 100 lbs. p.s.i. It is available in roll or sheet form and can be cut to particular shapes and patterns. Circle No. **184.**

Air Evacuater, Sealer

Specialty Equipment Co. has information on the Evac-Seal machine developed to evacuate air from multiple-wound saran wrap pouches. To operate, the product is placed in the multiple-wound saran wrap pouch. The open end of the pouch is placed on the sealing bed. The flat evacuating needle is inserted into the pouch. Hold down bars are lowered, automatically starting the vacuum pump and collapsing the pouch. A heating bar automatically ejects the needle and seals the pouch. Circle No. **185.**

Automatic Nailer

The Industrial Sales Div of United Shoe Machinery Corp. offers an illustrated bulletin on the Model B Powasert automatic nailer. Three sizes handle almost any headed nail ranging from 2d to 16d. The company claims production savings of up to 50 per cent in making boxes and crates. Circle No. **186.**

Hard-To-Mark Surfaces

Bankers & Merchants, Inc., will send complete prices and "use-data" on its most recent BAMI marker, designed especially for marking hard-to-mark surfaces where ordinary marking instruments may fail. BAMI markers feature ball-valve action and felt tip for permanent marking. Circle No. **187**

Do-It-Yourself Rubber Dies

American Evatype Corp. has an illustrated data sheet describing its "do-it-yourself" rubber die kit which contains all necessary professional materials, including a press for vulcanizing rubber dies. The complete kit sets up on a bench or table and occupies a 2×5-foot area. Its use should reduce downtime on equipment idled by waiting for new dies or emergency copy changes. Circle No. **188.**

Can Sorters And Uncasers

Beverage Equipment Dept. of RCA offers an eight-page illustrated brochure that lists operating details and gives specifications for a line of automatic can sorters and uncasers. These units are designed for high-speed uncasing and aligning of all standard cans of varying shapes in sizes from 6 oz. to 5 qts. These machines are also available in automatic models for low-cost operation where extremely high speeds are not necessary. Circle No. **189.**

Filler For Sudsing Products

Laub Engineering has a data sheet on its pressure filler developed exclusively for packaging sudsing, viscous and corrosive cleaning and polishing fluids in cans and squeeze bottles. Circle No. **190.**

Bag/Drum Filling Equipment

H. L. Stoker has a comprehensive set of technical data sheets of interest to all companies packaging in valve and open-mouth multiwall bags and drums. Included is data on packers, micro metric feeder systems and bag settlers. Circle No. **191.**

Numerical Measuring Of Color

Magnuson Engineers, Inc. has a 4-page brochure that describes its Agtron, a direct reading electronic color measuring instrument. It assigns numerical values to colors so color variations from standard are indicated on the meter, for interplant correlation and elimination of drifting colors. Circle No. **192.**

Cartoning Equipment

Bivans Corp. has an illustrated brochure describing its line of carton set-up, carton closing equipment, as well as accessory equipment for coding, gluing and handling various styles of cartons. Will handle cartons ranging from ⅞x⅜x1¼ in. to 5x3½x12 in. Circle No. **193.**

DO YOU PACKAGE A VARIETY OF PRODUCTS AND SIZES?

With the Wright Junior Weigher you can maintain accurate weights despite frequent change-overs. This semi-automatic, net weigher is . . .

• ***Versatile*** • ***Accurate*** • ***Gentle***

Only minutes are required to change from one weight or package to another.

Range: one-half ounce to one pound of dry, free-flowing products.

Write today for descriptive bulletin on this or other machines in our complete line of weighing-packaging equipment.

WRIGHT MACHINERY COMPANY
DIVISION OF SPERRY RAND CORPORATION
DURHAM, NORTH CAROLINA

DISTRICT OFFICES: Ridgefield, N. J., LaGrange, Ill., Dallas, Texas, San Francisco, Calif., Durham, N. C.
CANADA: Sperry Gyroscope Ottawa Limited, Ottawa, Ontario, Canada

Structural design notes for corrugated containers

Note No. 4:

Compressive strength of paperboard—Part III

By K. Q. Kellicutt,
Engineer,
Forest Products Laboratory,
Forest Service,
U. S. Department of Agriculture,
Madison, Wisconsin

Introduction. In Note No. 2 (*1*) of this series, it was emphasized that one of the hazards encountered in shipping and storage of commodities in corrugated containers is the crushing of containers that results from stacking them too high or for too long a period. This hazard is becoming more acute as mechanical handling equipment is enlarged, and in modern storage warehouses it is common practice to stack containers one on another to heights of 20 ft. or more for months at a time. A high degree of stiffness is obviously required if the bottom container is to resist such compressive stresses. How is the necessary stiffness attained, and how can it be measured beforehand?

Logically, the container is stiff only if made from stiff component paperboards. Its degree of stiffness is dependent largely upon the flute size and weight of components in the fibreboard, quality of fabrication, and the proportion of container dimensions, all of which will be covered in subsequent notes.

Stiffness of a given box design can best be measured in a compression machine that exerts a continuously increasing crushing load; then the corresponding displacement is measured. However, box stiffness can be predicted with reasonable accuracy from test values of the components. One testing technique that yields the appropriate information was described in Note No. 2 (*1*) as a *modified* ring-crush test. Another, which is more practical for general use because of its simplicity, is the subject of this note. It is the ring-crush test.

This test (*3*) consists of crushing a ½x6-in. strip of paperboard in a compression testing machine. The strip is held in a circular groove of a metal block. The groove is ¼ in. deep and provides support to the outside surface of the lower half of the specimen. The inner surface of the lower half of the circular specimen is supported by a removable center island. The unsupported round, hollow column of paperboard extending ¼ in. above the supports is loaded in a testing machine. A single value, maximum crushing load, is recorded during the test. Specimens are cut so that their length is either parallel or perpendicular to the machine direction of the paperboard, thus making it possible to determine the stiffness of liners or corrugating mediums in their two principal directions.

Specimen preparation is most important in ring-crush tests. The two length edges of the specimen must be parallel. This can best be done with a specimen cutter that cuts both sides of the specimen simultaneously. One such cutter is shown, together with the specimen holder, in Fig. 1.

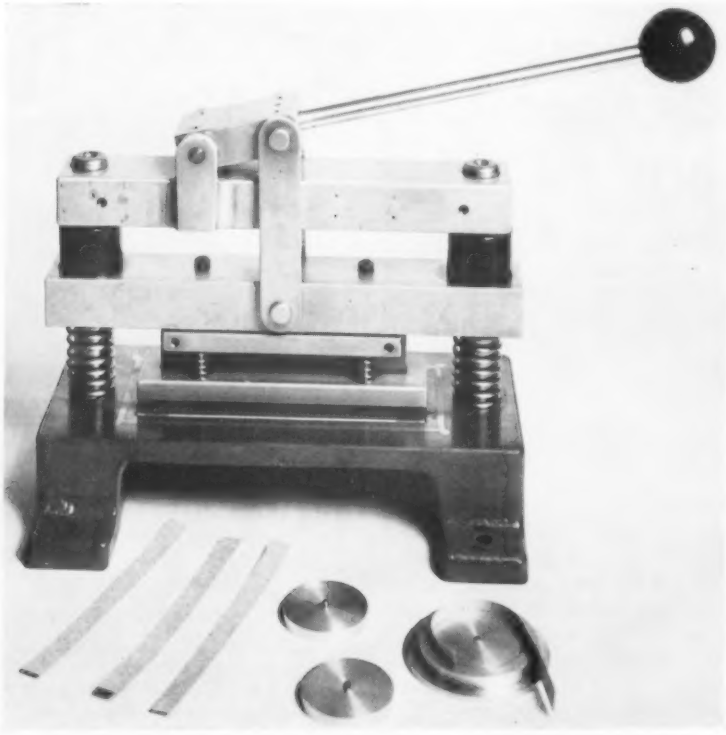


Fig. 1. Ring-crush specimen cutter and, in left foreground, three specimens of paperboard ½x6 in. cut with it. Specimen holder with specimen partially inserted is at right foreground with two removable islands.

Evaluating Ring-Crush And Strip Column Tests

To develop a simple test for use in design and specifications, the results of modified ring-crush tests of several paperboards were compared with the results on the same materials obtained with other testing techniques. Included were the ring-crush and strip column tests. The strip column test provides a means of holding a 4-in.-long strip of paperboard between two edge clamps, so that a column of paperboard 1/16 in. high can be tested.

Since, as explained in Note No. 3 (*2*) in this series, **the modified ring-crush test yields reliable data, results of simplified techniques can be compared to it to establish whether they are reliable.**

In many comparisons made for that purpose, the values of stress obtained from the modified ring-crush test were consistently higher than those values of stress obtained by the ring-crush and strip column tests. Generally, the values obtained with the two simpler techniques were about 75 per cent of those obtained with the modified ring-crush test. The

strip column, however, nearly always yielded higher values than the ring-crush test. This was attributed to the fact that, in the strip column test, the column of paperboard is shorter and the edge clamps hold the specimen more positively. Moreover, a tight fit is not always attained in the specimen holder of the ring-crush test, and hence a true crush value does not result. Rather, the specimen fails by a combination of buckling and crushing.

This belief was confirmed by some exploratory tests in which a means other than a removable island was devised to provide constant uniform support to the inner surface of the specimen. Also, in these tests the free column was reduced from ¼ to ⅛ in. With these changes, values of stress as high as 97 per cent of the value established by the modified ring-crush were attained, and the average of a number of such tests was 82 per cent. This finding thus provided an alternate testing technique if the conventional ring-crush technique should prove unsatisfactory for use in design. However, **the conventional ring-crush yields information that is satisfactory for design purposes, and the values derived with it can be used to predict with reasonable accuracy the strength of a box of any dimension, made from board fabricated from any combination of components, and corrugated with any of the three commonly used flute sizes.**

Some typical values attained with the three testing techniques discussed in the previous paragraphs are in Table I.

TABLE I

Comparison Of Stress At Maximum Load Of Several Paperboards Tested By Three Different Techniques

Kind Of Paperboard	Thickness (in.)	Grain Direction (machine)	Stress At Maximum Load: Modified ring crush (lb/sq. in.)	Strip column (lb/sq. in.)	Ring crush (lb/sq. in.)
Fourdrinier kraft*	0.0350	With	857	651	....‡
		Across	721	505	....‡
Fourdrinier kraft†	0.0174	With	1,156	884	786
		Across	981	714	722
Fourdrinier kraft*	0.0171	With	998	865	782
		Across	957	699	673
Fourdrinier kraft†	0.010	With	1,447	1,047	1,118
		Across	1,340	835	800
Aspen, high density	0.007	With	1,813	1,416	1,079
		Across	1,364	1,007	860
Jack pine, standard	0.015	With	1,179	867	965
		Across	914	685	681
Jack pine, high density	0.012	With	1,964	1,782	1,797
		Across	1,613	1,247	1,278
Semichemical	0.010	With	1,060	925	743
		Across	1,011	691	618
Steamed pine, groundwood	0.010	With	1,706	1,255	942
		Across	907	671	518
Chestnut	0.008	With	1,586	1,180	958
		Across	1,048	751	737

*DFBS = Dry finish both sides.
†WFIS = Wet finish one side.
‡Specimen too thick to test by this method.

Literature Cited

(1) Kellicutt, K. Q., "Note No. 2, Compressive strength of paperboard—Part I," *Package Engineering*, 4 (1959), No. 3 (Mar.), p. 76.

(2) ————, "Note No. 3, Compressive strength of paperboard—Part II," *Package Engineering*, 4 (1959), No. 4 (Apr.), p. 108.

(3) "Standard method of test for ring crush of paperboard," ASTM, designation: D1164-53. "Compression resistance of paperboard (ring-crush test)," TAPPI Tentative Standard T472m-51.

Sanitair
AUTOMATIC
Air Cleaner
THE E-Z AIR CLEANER
Semi-automatic. For air cleaning new containers of any size. Containers are inverted over the air valves, two at a time, up to 40 p.m. Positively removes all loose lint, dust particles, etc. Write for the "E-Z Bulletin"
THE CATCH WILL AMAZE YOU
U.S. ROTARY RINSER
For rinsing any size or shape bottles or jars. Cleans both insides and outsides of containers: water, steam or air. Neck-chipping is prevented. Write for "Rotary Rinser Bulletin".

MILLION DOLLAR *campaigns cannot risk the chain reaction made possible by one unclean container.*

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New book explores details of aluminum foil

Just how much a package user should know about a supplier's manufacturing art has long been a question. Some experts say that a thorough knowledge of manufacturing, fabricating, and converting processes is an indispensable prerequisite to successful package development work and packaging line operation. Others say that the package user needs relatively little of this information—pointing out that his supplier will tell him what he needs to know to answer any specific question, and further, that much of the knowledge a supplier has to offer is not geared to the user's point of view.

Kaiser Aluminum & Chemical Sales, Inc. has come up with a way to give a user whatever degree of comprehensiveness he desires with reference to aluminum foil. Its technical publications department recently published "Kaiser Aluminum Foil," a 234-page, hard cover (using aluminum foil) book containing ten illustrated chapters plus a glossary and index. Two chapters discuss the uses and the design possibilities of aluminum foil, two chapters cover its production and properties, and six chapters review basic aluminum foil converting processes.

It took John W. Knight of Kaiser's technical publications department two years to compile and write this book, and he and his department got help from some 200 companies.

Has Glossary, Many Drawings

The book is well organized, and the table of contents serves as an outline of each chapter. It helps augment the index which by itself is somewhat skeletal. Further, a six-page glossary with terms ranging from "alodizing" to "work hardness" enhances the book. While the numerous photos serve as useful illustrations (although most of them came from suppliers and equipment manufacturers), of far greater value are the line drawings, especially in the various chapters dealing with converting operations. These drawings are of distinct help to one seeking an understanding of the processes and desiring to ab-

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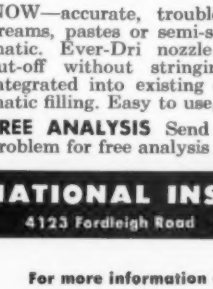

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sorb this understanding as quickly and easily as possible. The drawings are of professional caliber and enhance the utility of the publication.

A technical or operational packaging reader should not skip the chapter on "designing" merely because he has no concern with the visual or esthetic aspects of packaging. The chapter touches various practical and production aspects of designing—all of which might have a bearing on package specification work. Chapter V on laminating is especially detailed, occupying more than 40 pages of the book. A busy reader seeking to get at the heart of the subject can skip a good deal of the text and still benefit from the drawings accompanying it.

There are numerous tables throughout the book, and it is unfortunate the authors and editors did not list the tables in some sort of index form. Such a tabulation would be helpful to a technical packaging expert seeking quickly a table on some particular item such as the comparative covering areas of various type foils based on commercial thicknesses.

Since the book had to be planned for aluminum-using fields in addition to packaging, there are references to such non-packaging uses. The packaging expert may find it a bit distracting, for example, to have about half of the first chapter discussing non-packaging aspects. However, for the most part these non-packaging discussions are arranged so that the reader unconcerned with them can quickly bypass them. Elsewhere in the book there is possibly more than a package user needs concerning the supplier's in-plant operations.

Has Useful Tabular Data

Chapter III on "properties" offers an especially choice bit of compacted discussion. Only 20 pages long, it includes 19 tables and 18 figures. It should be of special interest for reference value.

Kaiser notes that some of its material is of more historical than current value but feels such references are important to an understanding of the subject. Further, some references may not be reflected in actual use. For example, some coatings or film formers are listed as "foil" coatings, even though there are no recorded applications of them. Kaiser says that the practicability of formulating such a coating specifically for application to aluminum foil has been verified with two or more coating manufacturers.

Offering this publication as both a textbook and as a manual, Kaiser is making it available without charge if requested on company letterhead. Readers desiring copies should write Kaiser Aluminum & Chemical Sales, Inc., 919 N. Michigan Avenue, Chicago 11, Illinois. In addition to making copies available gratuitously when requested on a company letterhead, Kaiser also is offering personal copies to individuals at $12.50 each.—R.B.H.

AMA publishes report on plastic sheet forming

The packaging division of the American Management Association has published a report on plastic sheet forming. Designated AMA Management Report No. 12, it covers materials and methods for packaging and industry.

It was prepared to bring together in one source authoritative discussions of plastic sheet forming: materials, methods, packaging and industrial applications, and a look into the future. It is made up of all the papers presented in New York City in January, 1958, at a special conference on the subject, plus specially prepared material.

Paperbound, the report contains 140 pages divided into five parts. These cover materials, methods, packaging applications, industrial applications, and progress and prospects.

The first part on materials includes cellulose acetate, cellulose acetate butyrate, polyethylene, polyester, polystyrene (impact and oriented), the ABS-type plastics (acrylonitrile, butadiene, styrene) and vinyl. Most of the papers cover the materials' properties, applications and thermoforming techniques. Some include a brief description of how the plastic is manufactured. In several instances, limitations in thermoforming are discussed.

Out of the nine discussions on materials, only four have graphs and/or tabular material. Three of these four contain two or three illustrations. The fourth, on rigid vinyl sheet, has nine illustrations making it very interesting. It is the most complete of all the discussions on materials.

Discussed under Part II are three methods of forming: continuous vacuum, pressure and AirSlip (a patented method). These discussions are fairly complete in their descriptions of the methods, but more information of interest to the engineer should be given.

The next part covers packaging applications. Interesting reading to those outside the purely technical areas of packaging, none of the four papers does more than touch lightly on the functional aspects; that is, giving protection to products. To be complete and to attract the technically minded people involved in protecting their products, several papers on this aspect should be included in the next revision.

Part IV contains three papers dealing with industrial applications ranging from refrigerator inner door panels to hobby horses. These papers contain limited amounts of information about the technology of plastic sheet forming industrially. Their main scope appears to be to

list generally many of the products made from plastics. This part is of little interest to the packaging engineer.

The report ends with discussions on progress made in the field of plastic sheet forming, trends in packaging and the outlook for the future. According to the predictions, one day we will be living in a world of plastics.

Available from American Management Association, Inc., 1515 Broadway, New York 36, N. Y., the report is priced at $3.75 (AMA members: $2.50.—H.E.V., Jr.

Plastics standards revised by ASTM

A revised edition of standards on plastics was published recently by the ASTM. Sponsored by Committee D-20, this single-volume, 1958 edition covers specifications, methods of testing, nomenclature, and definitions. Paperbound, the volume contains a total of 1,090 pages, with 1,046 devoted to the technical material.

As in all ASTM standards, the book is indexed by groups such as specifications, properties, analytical methods, adhesives, etc. Also included is a contents in numeric sequence.

Of the almost 200 entries, nearly half are standards, the remaining being tentatives. Test method D 988, "Water vapor permeability of paper and paperboard," has been discontinued and replaced by method E 96-53T, "Methods of measuring water vapor transmission of materials in sheet form."

Well illustrated, the publication contains many graphs, tables and photographs, all of which aid in following the procedure. Where necessary, important equations are given.

For molding compounds and base materials, specifications are given for such materials as phenolics, polystyrene, melamine-formaldehyde, vinyl chloride-acetate resins, polyesters, and others. Specifications and test methods are given for many molded shapes.

In addition to some of the familiar-sounding tests such as abrasion resistance, bursting strength, flexural strength, hardness, impact resistance, tensile strength, etc., there is an interesting test for Young's modulus in flexure of natural and synthetic elastomers. This covers procedures for the elastomers at normal and subnormal temperatures.

Over a dozen methods are listed under thermal properties, including tests for brittleness temperature of plastics and elastomers by impact, deformation of plastics under load, flammability, flow properties, Vicat softening points, etc. For optical properties, there are a number of tests for determining color difference, using several types of apparatus.

Of interest are the items which apply to permanence properties of plastics. For instance, a test for determining the resistance of plastics to artificial weathering uses a fluorescent sunlamp and a fog chamber. This is designed to simulate outdoor exposure in the laboratory.

The analytical methods include acetone extraction of phenolic molded products, density (by the density-gradient technique), sampling and testing of plasticizers used in plastics, specific gravity, viscosity, etc. Several methods and recommended practices are given for conditioning of plastics.

Fifteen pages are devoted to abbreviations, definitions, and nomenclature of plastics. Although tentatives, they appear to be reasonably complete. In the tentative nomenclature, there are several dozen terms listed under a "not recommended" section, with their recommended equivalents. The purpose of this is to assist the users in understanding such terms.

The book is available from the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. List price is $8.00; price to members: $6.40.—H.E.V., Jr.

Packaging machinery project coordination

(*Continued from Page 33*)

25 kg. and serves as a receptacle for production going to the filler. The products are sealed in polyethylene bags and do not come in contact with the sides of the metal containers. As noted above, they do not touch the hopper.

Illustrative of the building of special equipment is a five-tiered case dumper. This functions automatically under the guidance of an attendant. The unit unloads a five-tier case of glass vials as received from the glass manufacturer. It is a sequential unloading, layer by layer, and is tied in to the automatic infeed to the washing machines. (*End*)

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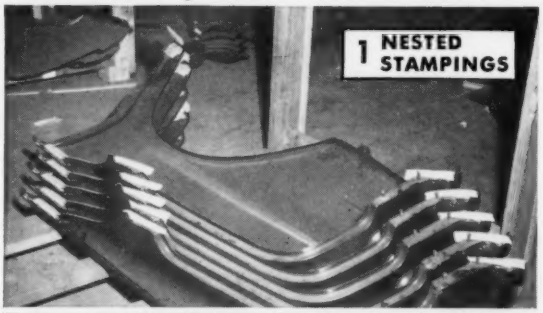

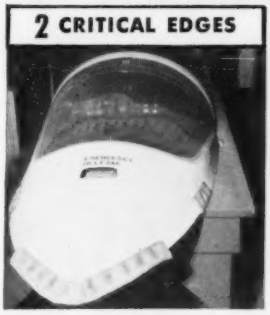

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What we think

Students show real promise: Their school deserves support

Whether packaging attracts inherently resourceful people or makes them resourceful after they get into packaging is a question. But there is no question about resourcefulness being a characteristic of a competent packaging specialist. Although it is difficult to assess intangibles, there is no doubt that resourcefulness, together with an ability to "get it done now" and the knack of spotting priorities and determining the relative urgency of various pieces of work to do, is important.

Have lab equipment, will "get up and go" with it

Packaging students at Michigan State University recently showed all three qualities. In desperate need of larger laboratory quarters, they watched with interest as art students vacated a quonset hut. Although they found they could have the hut as a new location for their packaging laboratory, nothing showed up in the way of state money—for an estimated $12,000 cost of remodeling the art building and moving the packaging equipment to it.

To a man, students of the school of packaging (through their two student organizations, Packaging Society and Pi Kappa Gamma, the new packaging honorary) volunteered at once to do three basic jobs: (1) Construction of a conditioning room for the packaging laboratory, (2) painting all rooms of the building and (3) personally moving the packaging machinery and equipment to the new location.

As nearly everyone who reads the newspapers knows, the state of Michigan is nearly broke. Without seeking the cause, such as to call it an excess of welfare statism or something of that ilk, or pinpointing responsibility for this unenviable condition, it is enough to say that the state and its subdivisions, including Michigan State University, are scratching the bottom of the barrel. There is no "extra" money to spend on packaging education.

Ultimately the school of packaging will have a $2,000,000 facility for teaching and research—providing industry comes up with the money. The university's school of packaging and its Packaging Foundation are now trying hard to raise this money. Packaging users and suppliers alike should support this effort enthusiastically and with dollars.

But you don't raise $2,000,000 overnight. In the interim, school of packaging teachers and students are trying to do the best they can with what they have. The opportunity of latching on to an about-to-be-vacated quonset was too good to pass up. This hut, at best a stopgap, is a big improvement over the old facilities. It was damnably difficult teaching and studying packaging, and evaluating packaging materials in areas resembling broom closets.

Although the immediate objective of the students was to keep their course work going and to get better space for their packaging laboratory, the real lesson of this project is for the packaging field itself: Here are some 110 students who are not only getting a specific education in technical packaging, but also are becoming abruptly knowledgeable in the realities of working out day-to-day compromises and taking advantage of practical, although transitory opportunities.

We wish them every success, and hope the packaging field digs deep into its pockets in supporting Michigan State's drive for $2,000,000.

This investment pays off in future experts

When college students are willing to build their own conditioning room, paint a whole building and by themselves lug heavy equipment around the block, they are showing more than just interest. They are showing they have that added difference making for success. Eventually they will need jobs, but industry will need them even more than they need it if we are to meet the challenges packaging will face in the sixties.

Bruce Hollingren

Editor

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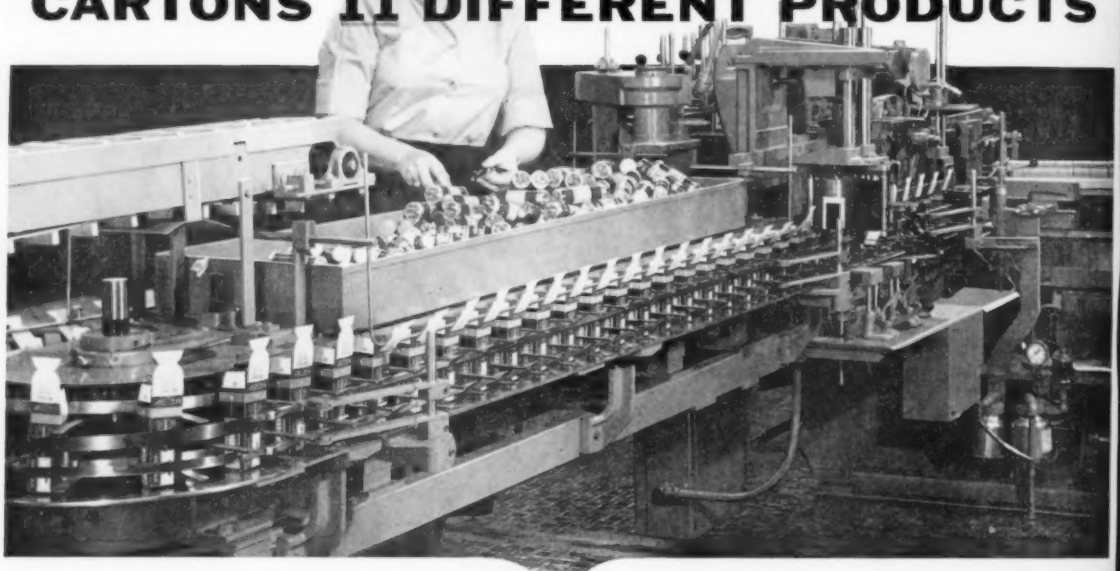

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